NATIONAL SERVICE MANUAL

CARBURETION SUPPLEMENT 1931—1932—1933

NATIONAL AUTOMOTIVE SERVICE

SAN FRANCISCO, CALIFORNIA

CARBURETORS USED ON 1931—1932—1933 CAR MODELS

Page	Car Model	Year	Carburetor Make	Carburetor Model No.
C-28	AUBURN 8-98, 8-98A	(1931)	Schebler	T
C-33	" 8-100	(1932)	Stromberg	URO-2
C-39	" 12-160	(1932)	Stromberg	EX-2
C-33	" 8-101	(1933)	Stromberg	URO-2
C-38	" 8-105	(1933)	Stromberg	EX-3
C-39	" 12-161, 165	(1933)	Stromberg	EX-2
C-43	AUSTIN Bantam	(1931-33)	Tillotson	M-10A
C-25	BUICK 8-50	(1931)	Marvel	T-3 10-894
C-25	" 8-60	(1931)	Marvel	TD-2S 10-975
C-25	" 8-60	(Late 1931)	Marvel	TD-2S 10-983
C-25	" 8-80, 90	(1931)	Marvel	TD-3 10-796
C-25	" 8-80, 90	(Late 1931)	Marvel	TD-3 10-984
C-25	" 32-50	(1932)	Marvel	TD-1S 10 982
C-25	" 32-60	(1932)	Marvel	TD-2S 10-1501
C-25	" 32-80, 90	(1932)	Marvel	TD-3 10-1503
C-25	" 33-50	(1933)	Marvel	ED-1S 10-1515
C-25	" 33-60	(1933)	Marvel	ED-2S 10-1518
C-25	" 33-80, 90	(1933)	Marvel	ED-3 10-1514
C-19	CADILLAC 355	(1931)	Cadillac	
C-19	" 370	(1931)	Cadillac	
C-19	" 452	(1931)	Cadillac	
C-19	" 355-B	(1932)	Cadillac	
C-21	" 370-B	(1932)	Detroit	51
C-21	" 452-B	(1932)	Detroit	51
C-19	" 355-C	(1933)	Cadillac	
C-21	" 370-C	(1933)	Detroit	51
C-21	" 452-C	(1933)	Detroit	51
C-12	CHEVROLET AE Indpt.	(1931)	Carter	150-S
C-13	" BA Intrnl.	(1932)	Carter	212-S, 235-S
C-13	" BB Truck	(1932)	Carter	222-S, 222-SA
C-13	" CB Mstr.	(1933)	Carter	259-S
C-13	" CC Stnd.	(1933)	Carter	260-S
C-33	CHRYSLER CM Six	(1931)	Stromberg	UR-2
C-35	" CD Eight	(1931)	Stromberg	DX-3
C-35	" CDX Eight	(1931)	Stromberg	DX-3
C-37	" CG Imp.	(1931)	Stromberg	DD-3
C-15	" CI Six	(1932)	Carter	6A1, 6B1, 6B2
C-36	CHRYSLER *CD	(1932)	Stromberg	DXC-3, DXR-3
C-36	" CP Eight	(1932)	Stromberg	DXR-3
C-37	" CH, CL Imp.	(1932)	Stromberg	DD-3
C-38	" CO Six	(1933)	Stromberg	EX-32
C-38	" CP Royal 8	(1933)	Stromberg	EX-32
C-38	" CQ Imp. 8	(1933)	Stromberg	EX-32
C-40	" *CL Cust. Imp. ('33)		Stromberg	EE-3
C-23	CONTINENTAL Beacon	(1933)	Marvel	AC 10-1530
C-23	" Flyer	(1933)	Marvel	B 10-1540
C-23	" Ace	(1933)	Marvel	B 10-1545
C-28	CORD L-29	(1931-32)	Schebler	S Duplex
C-34	CUNNINGHAM V-9	(1931	Stromberg	UUR-2
C-34	" V-10	1932-33)	Stromberg	UUR-2
C-12	DE SOTO CK Six	(1931)	Carter	159-S
C-35	" CF Eight	(1931)	Stromberg	DX-3
C-12	" SA Six	(1931)	Carter	188-S, 200-S
C-15	" SC Six	(1932)	Carter	6B, 6B1, 6B2
C-16	" SD Six	(1933)	Carter	E6A, E6A3, E6A4
C-44	DE VAUX 6-75	(1931)	Tillotson	J
C-44	" 6-80	(1932)	Tillotson	J
C-12	DODGE DH Six	(1931)	Carter	181S, 197S, 215S
C-35	" DG Eight	(1931)	Stromberg	DX-3
C-36	" DG Eight	(1931)	Stromberg	DXR-3
C-15	" DL Six	(1932)	Carter	6A2, 6B2
C-36	" DK Eight	(1932)	Stromberg	DXR-3
C-38	" DP Six	(1933)	Stromberg	EX-22
C-16	" DO Eight	(1933)	Carter	E8A
C-28	DUESENBERG J	(1931-33)	Schebler	S Duplex
C-28	DU PONT G	(1931-33)	Schebler	S Duplex
C-44	DURANT 6-10	(1931)	Tillotson	J
C-32	" 6-12, 14	(1931	Stromberg	U-2
C-44	" 6-19	(1931	Tillotson	J-5B
C-44	" 6-21, 22	(1932)	Tillotson	J-5B
C-25	ESSEX SS	(1931)	Marvel	VE-3 10-947
C-25	" SS	(1932)	Marvel	VE-3 10-995
C-13	ESSEX TERRA. K	(1932)	Carter	243-S
C-13	" " K, KU	(1933)	Carter	267-S

CARBURETORS USED ON 1931—1932—1933 CAR MODELS

Page	Car Model	Year	Carburetor Make	Carburetor Model No.
C-13	**ESSEX TERRA.** KT-8	(1933)	Carter	261-S
C-46	**FORD** A, B	(1931-33)	Zenith	
C-22	" V-8	(1932)	Detroit	18-9510
C-22	" V-8-112	(1933)	Detroit	40-9510
C-6	**FORD FUEL PUMPS.** V-8 and Four Cylinder Types (used on 1932-33 Models).			
C-32	**FRANKLIN** 15	(1931)	Stromberg	U-2
C-32	" 16	(1932)	Stromberg	U-2
C-39	" 17	(1932)	Stromberg	EE-2
C-33	" 16-B	(1933)	Stromberg	UR-2
C-39	" 17-B	(1933)	Stromberg	EE-2
C-33	" 18	(1933)	Stromberg	UR-2
C-44	**FRONTENAC** 6-70	(1932)	Tillotson	J-4A
C-44	" 6-85	(1932)	Tillotson	J-7A
C-23	" C-400	(1933)	Marvel	AC 10-1530
C-23	" C-600	(1933)	Marvel	B 10-1540
C-20	**GRAHAM** 53, 54	(1931)	Detroit	51
C-20	" 49	(1931)	Detroit	51
C-20	" 42 Cust.	(1931)	Detroit	51
C-20	" 58 Six	(1932)	Detroit	51
C-20	" 57 Eight	(1932)	Detroit	51
C-20	" 65 Six	(1933)	Detroit	51
C-20	" 64 Eight	(1933)	Detroit	51
C-20	" 57A Cust.	(1933)	Detroit	51
C-25	**HUDSON** Eight	(1931)	Marvel	VH-4 10-949
C-25	" Eight	(1932)	Marvel	VH-4 10-989
C-25	" Six	(1933)	Marvel	VE-3 10-1533
C-25	" Eight	(1933)	Marvel	VH-4 10-1536
C-32	**HUPMOBILE** S-6	(1931)	Stromberg	U-2
C-32	" L-8	(1931)	Stromberg	UU-2
C-32	" C	(1931)	Stromberg	UU-2
C-37	" H, U	(1931)	Stromberg	DD-3
C-36	" 216 B	(1932)	Stromberg	DXR-2
C-34	" 222 F	(1932)	Stromberg	UUR-2
C-34	" 226 I	(1932)	Stromberg	UUR-2
C-13	" 321 K	(1933)	Carter	258-S
C-34	" 322 F	(1933)	Stromberg	UUR-2
C-34	**HUPMOBILE** 326 I	(1933)	Stromberg	UUR-2
C-19	**LA SALLE** 345	(1931)	Cadillac	
C-19	" 345-B	(1932)	Cadillac	
C-19	" 345-C	(1933)	Cadillac	
C-37	**LINCOLN** V-8	(1931-32)	Stromberg	DD-3
C-37	" V-12	(1932)	Stromberg	DD-3
C-39	" V-12-136	(1933)	Stromberg	EE-22
C-37	" V-12-145	(1933)	Stromberg	DD-3
C-32	**MARMON** 70	(1931)	Stromberg	UX-2
C-28	" 88	(1931)	Schebler	S Duplex
C-34	" 8-125	(1932)	Stromberg	UUR-2
C-37	" 16	(1931-33)	Stromberg	DDR-3
C-12	**NASH** 6-60	(1931)	Carter	147-S
C-13	" 8-70	(1931)	Carter	167-S, 186-S
C-24	" 8-80	(1931)	Marvel	DN 10-941
C-34	" 8-90	(1931)	Stromberg	UUR-2
C-12	" 9-60	(1931-32)	Carter	147-SA
C-36	" 9-70	(1931-32)	Stromberg	DXR-2
C-34	" 9-80	(1931-32)	Stromberg	UUR-2
C-34	" 9-90	(1931-32)	Stromberg	UUR-2
C-38	" 10-60	(1932)	Stromberg	E-2
C-39	" 10-70	(1932)	Stromberg	EE-2
C-34	" 10-80	(1932)	Stromberg	UUR-2
C-34	" 10-90	(1932)	Stromberg	UUR-2
C-38	" 11-20	(1933)	Stromberg	EX-22
C-38	" 11-30	(1933)	Stromberg	EX-22
C-39	" 11-70	(1933)	Stromberg	EE-2
C-34	" 11-80	(1933)	Stromberg	UUR-2
C-34	" 11-90	(1933)	Stromberg	UUR-2
C-24	**OAKLAND** 301	(1931)	Marvel	DO 10-952
C-36	**OLDSMOBILE** F-31	(1931)	Stromberg	DXR-2
C-38	" F-32	(1932)	Stromberg	EC-2
C-39	" L-32	(1932)	Stromberg	EE-2
C-39	" F-33	(1933)	Stromberg	EC-22
C-40	" L-33	(1933)	Stromberg	EE-22
C-20	**PACKARD** 8-26, 33	(1931)	Detroit	51
C-20	" 8-40, 45	(1931)	Detroit	51

CARBURETORS USED ON 1931—1932—1933 CAR MODELS

Page	Car Model	Year	Carburetor Make	Carburetor Model No.
C-20	PACKARD 900	(1932)	Detroit	51
C-20	" 901, 902	(1932)	Detroit	51
C-20	" 903, 904	(1932)	Detroit	51
C-39	" 905, 906	(1932)	Stromberg	EE-3
C-40	" 1001, 2	(1933)	Stromberg	EE-22
C-40	" 1003, 4	(1933)	Stromberg	EE-22
C-39	" 1005, 6	(1933)	Stromberg	EE-3
C-28	PEERLESS A Std. 8	(1931)	Schebler	T
C-29	" B Mstr.	(1931-32)	Schebler	U
C-28	" C Cust.	(1931-32)	Schebler	S Duplex
C-34	PIERCE ARROW 41, 2, 3	(1931)	Stromberg	UUR-2
C-39	" " 51, 2, 3	(1932)	Stromberg	E-2
C-34	" " 54	(1932)	Stromberg	UUR-2
C-40	" " 836	(1933)	Stromberg	EE-3
C-39	" " 1236, 42, 47	(1933)	Stromberg	EX-32
C-13	PLYMOUTH 30-U	(1931)	Carter	156-S
C-13	" PA	(1931)	Carter	209-S
C-15	" PB	(1932)	Carter	4A2, 4A3
C-16	" PC Six	(1933)	Carter	C6A, C6A2, C6A3
C-16	" PB DeLuxe	(1933)	Carter	C6A3, C6A4
C-26	PONTIAC 401 Six	(1931)	Marvel	10-955
C-26	" 402 Six	(1932)	Marvel	10-992
C-24	" 302 Eight	(1932)	Marvel	DO 10-993
C-13	" 601 Eight	(1933)	Carter	255S, 266S, 280S
C-29	REO 6-21, 25	(1931-32)	Schebler	U
C-28	" 8-21, 25	(1931-32)	Schebler	T
C-28	" N-30, 35	(1931)	Schebler	S Duplex
C-47	" S-1	(1932)	Zenith	Var.
C-38	" S-1	(1932)	Stromberg	EX-2
C-28	" 31, 35, 52	(1932)	Schebler	S Duplex
C-47	" S-2	(1933)	Stromberg	EX-32
C-28	" N-2	(1933)	Schebler	S Duplex
C-33	ROCKNE 65	(1932)	Stromberg	UR-2
C-33	" 75	(1932)	Stromberg	UR-2
C-33	" 10-31	(1933)	Stromberg	UR-2

C-5 **SISSON AUTOMATIC CHOKE** (standard equipment on De Soto, Model SD, 1933).

Page	Car Model	Year	Carburetor Make	Carburetor Model No.
C-32	STUDEBAKER 54 Six	(1931)	Stromberg	U-2
C-32	" 61 Dict.	(1931)	Stromberg	UU-2
C-34	" 61 Dict.	(1931)	Stromberg	UUR-2
C-32	" 70 Comm.	(1931)	Stromberg	UU-2
C-34	" 70 Comm.	(1931)	Stromberg	UUR-2
C-34	" 80, 90 Pres.	(1931)	Stromberg	UUR-2
C-33	" 55 Six	(1932)	Stromberg	UR-2
C-34	" 62 Dict.	(1932)	Stromberg	UUR-2
C-34	" 71 Comm.	(1932)	Stromberg	UUR-2
C-34	" 81, 91 Pres.	(1932)	Stromberg	UUR-2
C-39	" 56 Six	(1933)	Stromberg	EX-22
C-40	" 73 Comm.	(1933)	Stromberg	EE-22
C-40	" 82 Pres.	(1933)	Stromberg	EE-22
C-40	" 92 Spdwy.	(1933)	Stromberg	EE-22
C-48	STUTZ LA	(1931)	Zenith	105-DC
C-48	" SV-16	(1931-32)	Zenith	105-DC
C-28	" DV-32	(1931-32)	Schebler	S Duplex
C-48	" LAA	(1932-33)	Zenith	105-DC
C-48	" SV-16	(1933)	Zenith	105-DC
C-39	" DV-32	(1933)	Stromberg	EE-3
C-44	WILLYS 97, 98D	(1931)	Tillotson	J-1A
C-44	" 8-80D	(1931)	Tillotson	W-5D
C-44	" 6-90	(1932)	Tillotson	J-1B
C-44	" 8-88	(1932)	Tillotson	W-5D
C-44	" 6-90A	1932-33)	Tillotson	J-1B
C-44	" 8-88A	(1932-33)	Tillotson	W-5D
C-43	" 77 Four	(1933)	Tillotson	D-1A
C-43	" 99 Six	(1933)	Tillotson	D-2A
C-44	WILLYS KNT. 87	(1931)	Tillotson	W-3B
C-44	" " 95	(1931)	Tillotson	J-3B
C-45	" " 66-D	(1931-32)	Tillotson	V-5B
C-45	" " 66-E	(1932-33)	Tillotson	V-5B

C-8 **STEWART WARNER FUEL PUMP.** Electric Model 544.

C-10 **STEWART WARNER FUEL PUMP.** Mechanical (camshaft drive) Model 706.

C-30 **STROMBERG FAST IDLE.**

C-31 **STROMBERG AUTOMATIC CHOKE.** Model B (1932), C (1933).

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Page	Car Model	Year	Make	Carb. Model No.
C-81	**A.C. FUEL PUMP,** Types E, O, P.			
C-82	**A.C. FUEL PUMP,** Types F, I, J (Combination Fuel and Vacuum Pump).			
C-83	**A.C. FUEL PUMP,** Types R, T.			
C-90	**AUBURN** 6-52X, 6-52Y	(1934)	Carter	288-S
C-99	**AUBURN** 8-50X	(1934)	Stromberg	EX-32
C-100	**AUBURN** 8-50Y	(1934)	Stromberg	EE-1
C-103	**AUSTIN** Bantam	(1934)	Tillotson	M-10A
	AUTOMATIC CHOKES:—			
C-84	Carter Climatic Control.			
C-85	Delco-Remy Carburetor Control, Models 498-C, 498-D.			
C-86	Sisson, 1934 Model.			
C-88	Stromberg, Type H.			
C-87	Stromberg with integral Fast Idle mechanism.			
C-95	**BUICK** 34-40	(1934)	Marvel	BB-1, 10-1633
C-96	**BUICK** 34-50	(1934)	Marvel	ED-1S, 10-1577
C-96	**BUICK** 34-60	(1934)	Marvel	ED-2S, 10-1579
C-96	**BUICK** 34-90	(1934)	Marvel	ED-3, 10-1581
C-93	**CADILLAC** 355-D (V-8)	(1934)	Detroit	X-8244
C-93	**CADILLAC** 370-D (V-12)	(1934)	Detroit	51
C-93	**CADILLAC** 452-D (V-16)	(1934)	Detroit	51
C-84	**CARTER CLIMATIC CONTROL** (Used on Hudson and Terraplane).			
C-90	**CHEVROLET** DC Std.	(1934)	Carter	285-S
C-90	**CHEVROLET** DA Mstr.	(1934)	Carter	284-S
C-91	**CHRYSLER** CA, CB Six	(1934)	Carter	E6C1
C-100	**CHRYSLER** CU Eight	(1934)	Stromberg	EE-22
C-100	**CHRYSLER** CV Imp. Eight	(1934)	Stromberg	EE-22
C-100	**CHRYSLER** CW Cust. Imp.	(1934)	Stromberg	EE-3
C-94	**CONTINENTAL** 41 Four	(1934)	Marvel	AC, 10-1530
C-98	**CUNNINGHAM** V-10	(1934)	Stromberg	UUR-2
C-85	**DELCO-REMY CARBURETOR CONTROL,** Models 498-C, 498-D.			
C-91	**DE SOTO** SE	(1934)	Carter	E6B1
C-92	**DETROIT SEMI-AUTOMATIC CHOKE.**			
C-99	**DODGE** DR, DS	(1934)	Stromberg	EX-22
C-100	**DUESENBERG** J	(1934)	Stromberg	EE-3
C-100	**FORD** V-8-112	(1934)	Stromberg	EE-1
C-89	**FAST IDLES.**			
C-84	Carter (in Carter Climatic Control).			
C-97	Marvel (Buick Equipment).			
C-86	Stromberg Lever Type.			
C-87	Stromberg integral with Automatic Choke.			
	FUEL PUMPS:			
C-81	A.C., Types E, O, P.			
C-83	A.C., Types R, T.			
C-82	A.C., Types F, I, J Combination Fuel and Vacuum Pump.			

Page	Car Model	Year	Make	Carb. Model No.
C-98	**FRANKLIN** 18-B, C	(1934)	Stromberg	URO-2
C-98	**FRANKLIN** 19-A, B	(1934)	Stromberg	URO-2
C-99	**GRAHAM** 68 Std. Spec. 6	(1934)	Stromberg	EX-22
C-98	**GRAHAM** 67 Std. 8	(1934)	Stromberg	URO-2
C-99	**GRAHAM** 67 Spec. 8	(1934)	Stromberg	EX-32
C-99	**GRAHAM** 69 Cust. 8	(1934)	Stromberg	EX-32
C-90	**HUDSON** LL, LT	(1934)	Carter	282-S
C-90	**HUDSON** LTS Chall.	(1934)	Carter	299-S
C-99	**HUPMOBILE** 417-W	(1934)	Stromberg	EX-32
C-99	**HUPMOBILE** 421-J	(1934)	Stromberg	EX-32
C-98	**HUPMOBILE** 422	(1934)	Stromberg	UUR-2
C-98	**HUPMOBILE** 426	(1934)	Stromberg	UUR-2
C-100	**HUPMOBILE** 427-T	(1934)	Stromberg	EE-22
C-94	**LA FAYETTE** 110	(1934)	Marvel	B-1, 10-1603
C-100	**LA SALLE** 350	(1934)	Stromberg	EE-23
C-100	**LINCOLN** V-12-136, 145	(1934)	Stromberg	EE-22
C-97	**MARVEL FAST IDLE** (Buick Equipment).			
C-99	**NASH** 1220 Six	(1934)	Stromberg	EX-32
C-100	**NASH** 1280 Adv. 8	(1934)	Stromberg	EE-22
C-98	**NASH** 1290 Ambass. 8	(1934)	Stromberg	UUR-2
C-99	**OLDSMOBILE** F-34 Six	(1934)	Stromberg	EX-22
C-99	**OLDSMOBILE** F-34 Six	(1934)	" (Auto. Choke)	EX-23
C-100	**OLDSMOBILE** L-34 Eight	(1934)	Stromberg	EE-1
C-100	**PACKARD** 1100, 1, 2	(1934)	Stromberg	EE-22
C-100	**PACKARD** 1103, 4, 5	(1934)	Stromberg	EE-22
C-100	**PACKARD** 1106, 7	(1934)	Stromberg	EE-3
C-100	**PIERCE ARROW** 836-A	(1934)	Stromberg	EE-3
C-100	**PIERCE ARROW** 840-A	(1934)	Stromberg	EE-3
C-99	**PIERCE ARROW** 1240-A, 48-A	(1934)	Stromberg	(2) EX-3
C-91	**PLYMOUTH** PF, PG	(1934)	Carter	C6B1
C-91	**PLYMOUTH** PE	(1934)	Carter	C6B1
C-90	**PONTIAC** 603	(1934)	Carter	283-S
C-88	**STROMBERG AUTOMATIC CHOKE,** Type H.			
C-87	**STROMBERG AUTOMATIC CHOKE** with integral Fast Idle.			
C-86	**STROMBERG FAST IDLE,** Lever Type.			
C-86	**SISSON AUTOMATIC CHOKE,** 1934 Type.			
C-98	**STUDEBAKER** A Dictator	(1934)	Stromberg	UR-23
C-99	**STUDEBAKER** B Commander	(1934)	Stromberg	E-33
C-100	**STUDEBAKER** C President	(1934)	Stromberg	EE-22
C-104	**STUTZ** SV-16	(1934)	Zenith	105-DC
C-100	**STUTZ** DV-32	(1934)	Stromberg	EE-3
C-90	**TERRAPLANE** K, KU	(1934)	Carter	281-S
C-90	**TERRAPLANE** KS Chall.	(1934)	Carter	295-S
C-103	**WILLYS** 77 Four	(1934)	Tillotson	D-1A

SISSON AUTOMATIC CHOKE

EQUIPMENT ON DE SOTO SD (1933)

DESCRIPTION:—The Sisson Automatic Choke is designed to correctly choke the carburetor for starting under all conditions of engine temperature and also to control the position of the choke valve during the warming up period. When the engine is started cold, the Automatic Choke fully closes the choke valve until the engine begins to fire and the valve is then progressively opened through the action of a thermostatic spring as the engine warms up until the choke is entirely open with the engine at the proper operating temperature. When the engine is warm when started, the choke valve is not fully closed, the amount of choke being determined by the engine temperature. When the engine is hot when started, no choke at all is applied.

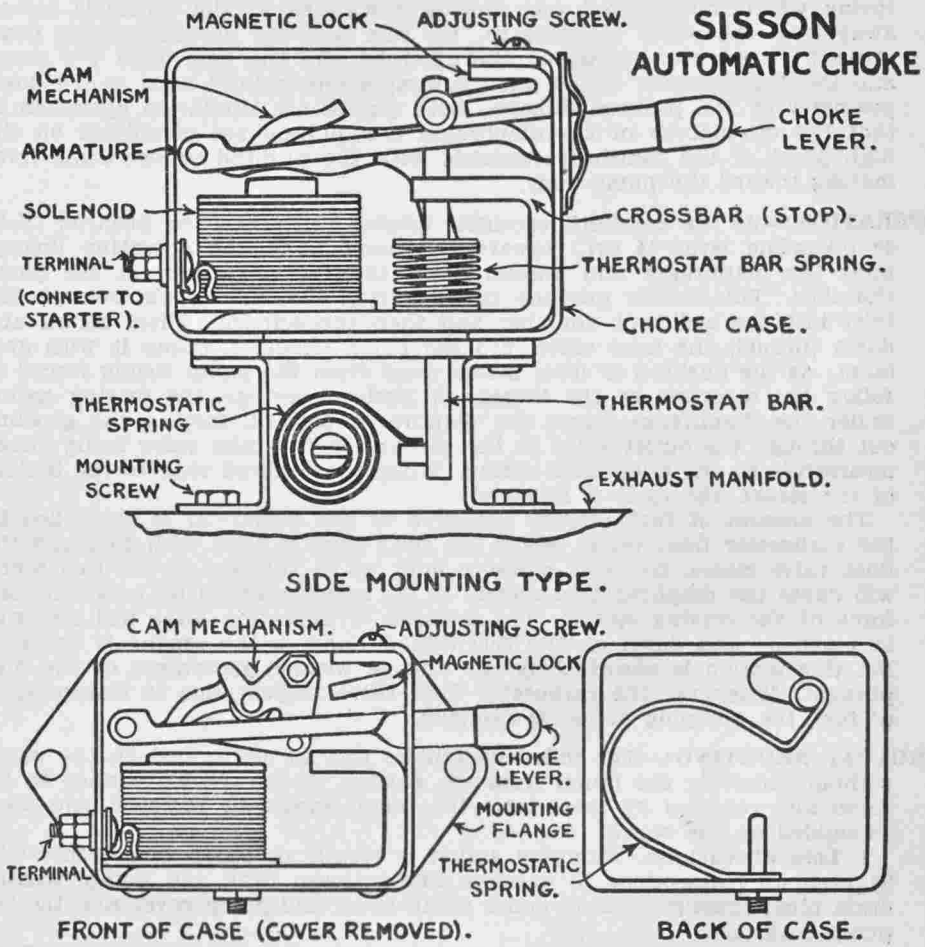
The device is supplied in two types, for side and top mounting on the exhaust manifold, and can be installed on any car with an offset choke valve and a relief valve on the wing of the choke valve. If the choke valve in the carburetor is not of this design it will be necessary to replace the choke valve when the Automatic Choke is installed.

OPERATION:—See illustration for details of construction. The solenoid terminal on the end of the choke case is connected to the starter side of the starting switch so that the solenoid is energized whenever the starter is in operation and the solenoid circuit is broken when the starting switch is released. When the starting switch is closed, the solenoid pulls down the armature or operating lever which is connected to the carburetor choke valve lever. If the engine is cold the lever completely closes the choke valve. However if the engine is warm a cam in series with the thermostat regulates the amount of choke by preventing the full stroke of the operating lever. If the engine is hot a magnetic lock holds the operating lever in place so that no choke is applied. When the engine begins to fire and the starting switch is opened, the solenoid circuit is broken and the choke operating lever is controlled entirely by the thermostatic spring. The amount of choke then depends on the engine temperature and the choke valve is opened progressively to the wide open position as the engine warms up.

INSTALLATION:—The choke may be mounted on the top or side of the exhaust manifold (separate models are supplied for each type of mounting). The operating lever should be connected to the choke valve lever with the connecting linkage supplied. The terminal on the side of the choke case must be connected to the starter side of the starting switch so that the solenoid circuit is completed only when the starter is operating.

ADJUSTMENT:—With the Automatic Choke connected to the carburetor choke valve, adjust position of choke valve lever so that the clearance between the operating lever and the cross bar which serves as a stop (within the Automatic Choke case) is .015-.020 inch with choke valve closed tight. Then raise operating lever to extreme uppper position, see that choke valve is wide open, and adjust magnetic lock position by turning adjusting screw on top of choke case until operating lever rests against magnetic lock. On the De Soto the adjustment should be made so that the operating lever rests against the magnetic lock with .015 inch clearance between the choke valve lever and the choke valve lever stop screw.

TESTING:—With the engine cold watch the Automatic Choke action when the starter switch is closed. The choke valve on the carburetor should snap closed. Operate engine until it is thoroughly warmed up. See that operating lever rests against magnetic lock. Watch Automatic Choke action when starter switch is closed with engine hot. The operating lever should not move and the choke valve should not be closed.



FORD FUEL PUMPS

V-8 AND FOUR CYLINDER TYPES

DESCRIPTION:—The Ford Fuel Pumps are mechanically operated diaphragm pumps mounted on the crankcase and driven by an eccentric on the camshaft. Two types of pump have been used on the V-8 models. The principal difference in these types is in the linkage (see illustration). On the first type pump, diaphragm and pullrod were pulled down by the pushrod spring when the pushrod was moving downward as the eccentric moved away from the pump (downward). On this type the pushrod merely compressed the pushrod spring on the upstroke. On the later type V-8 pump and the four cylinder model, the diaphragm and pullrod were pulled down positively by the pushrod linkage. Both pumps are similar in operation in that the downstroke of the diaphragm and pullrod are completed on the high point of the camshaft eccentric with the pushrod or operating lever moving toward the pump body.

OPERATION:—As the camshaft eccentric rotates and forces the pushrod (V-8) or operating lever (4 cyl.) toward the pump body, the operating linkage pulls the diaphragm and pullrod down creating a vacuum in the pump chamber. This causes gasoline to flow from the main tank through the inlet into the sediment chamber and then through the filter screen and down through the inlet valve into the pump chamber, filling it with gasoline. As the pushrod or lever moves away from the pump (being forced to follow the eccentric by the linkage or pushrod spring), the driving spring under the diaphragm forces the diaphragm upward, forcing the gasoline out through the outlet valve to the carburetor, the inlet valve being closed meanwhile by the inlet valve spring. When the pushrod reaches the bottom of the stroke, the cycle is repeated.

The amount of fuel actually delivered to the carburetor is controlled by the carburetor float valve. When the float bowl is filled with fuel and the float valve closes, the back-pressure built up in the line to the fuel pump will cause the diaphragm to remain in its lowest position by balancing the force of the driving spring. The pushrod or operating lever will continue to move up and down on the eccentric as long as the engine is operated but this motion is absorbed by the linkage without movement of the diaphragm. Whenever the carburetor float valve reopens due to consumption of fuel, the pumping action is resumed.

TROUBLE SHOOTING:—The following repairs may be performed on the pump without removing the pump from the engine. If the trouble cannot be located and repaired by these tests the pump should be removed and dis--assembled on the bench:

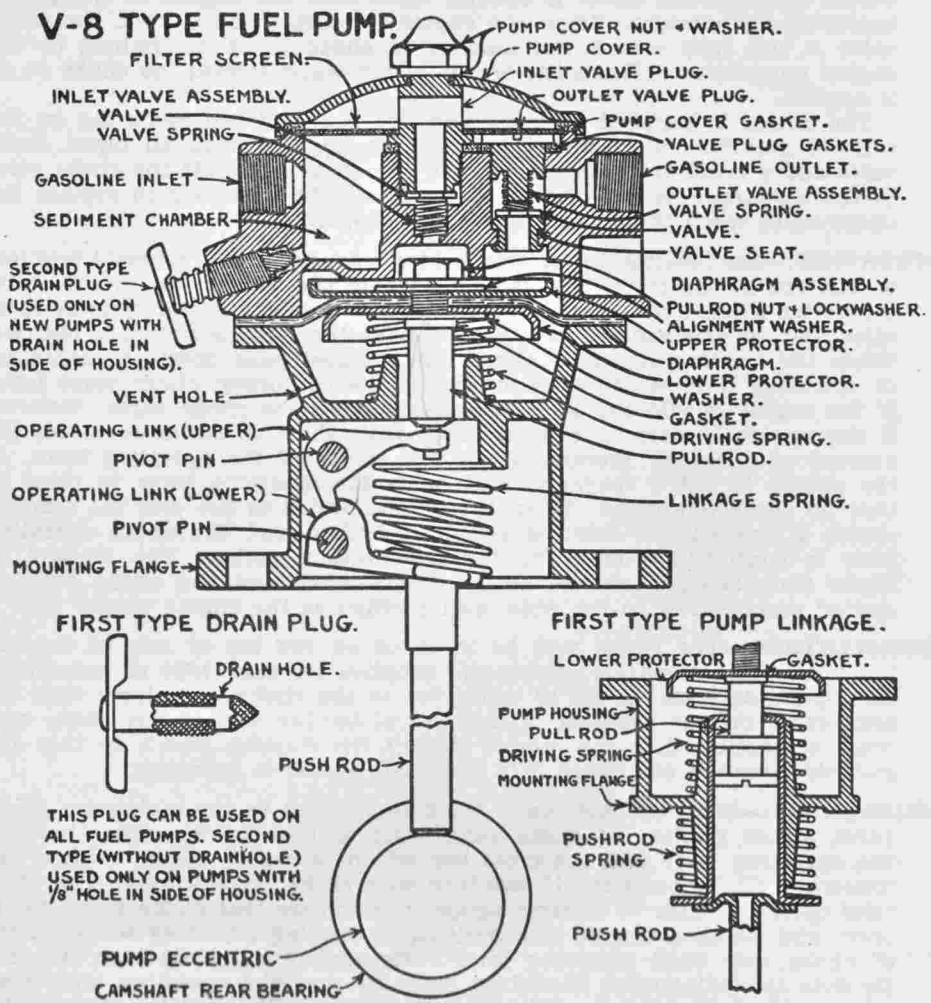
1. **Loss of Vacuum.** Pumping action is erratic or pump fails completely. Tighten all connections in gasoline line between tank and pump, tighten drain plug, examine gaskets under pump cover and pump cover nut, tighten pump cover nut.

2. **Filter Screen Clogged.** Filter screen is located under pump cover. Take off pump cover nut, remove pump cover and clean screen. If necessary, replace screen with new design incorporating reinforcing ribs to prevent distortion of the screen. See that cover gasket and coved nut gasket are in good condition before reassembling.

3. **Loose Valve Plugs.** Valve plugs can be inspected with pump cover removed. Gaskets under valve plugs must be in good condition and valve plugs tightened securely. This is particularly important in regard to inlet valve plug which may be loosened in taking off cover nut.

4. **Leaks at Diaphragm.** Tighten upper pump body screws evenly and securely. Make certain that leakage is actually occurring at this point and not at the drain plug or pump cover.

5. **Sediment and Water in Pump.** Fuel pumps are provided with a sediment chamber in the pump body and a drain plug on the side of the upper pump body. On the first type pumps the drain plug was hollow and sediment and water could be drained off by unscrewing the drain plug slightly. On later pumps a ⅛ inch hole was drilled through the side of the drain plug boss and a new Type B-9185-B solid drain plug used. Water is drained from this type pump by unscrewing the drain plug until this hole is connected to the sediment chamber. The first Type B-9185-AR drain



plug (which may be identified by the hole just back of the taper seat) can be used on either type pump but the new type drain plug without this hole should only be used on pumps with the ⅛ inch drain hole drilled in the pump housing. Water and sediment should be drained from the pump at approximately 1000 mile intervals.

6. **Leakage at Vent Hole.** This may indicate a punctured diaphragm or leakage around the pullrod. This will require disassembling of the pump, replacement of the diaphragm or replacement of the pullrod gasket and tightening of the pullrod nut (see instructions below).

FORD FUEL PUMPS

V-8 AND FOUR CYLINDER TYPES

SERVICING:—If the above operations do not correct pump trrouble or if it is necessary to disassemble pump to replace diaphragm or correct leakage at pullrod, spot upper and lower pump bodies to assure correct reassembly, remove pump cover by taking off pump cover nut, remove upper pump body by taking out upper body screws. This will expose diaphragm assembly. In replacing diaphragms, diaphragm assembly must be completed off the pump on both the new V-8 and 4 cylinder pumps. This will require disengaging the pullrod from the operating link and mounting the pullrod in a vise.

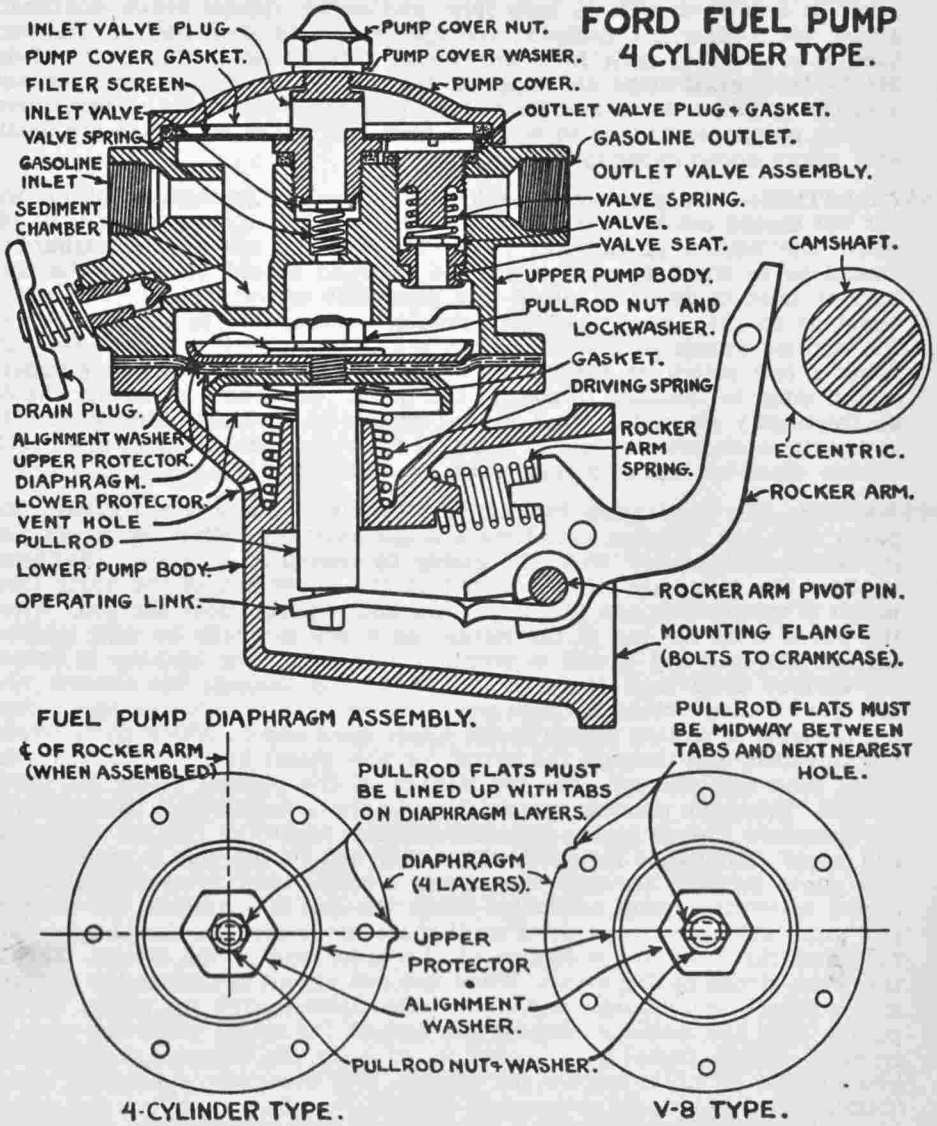
Diaphragm Assembly. Clamp flatted end of pullrod in jaws of bench vise (Type B-9393 rod, 2⅛" long over all on 4 cyl. pump. Type 18-9405-B rod, 1 13/16" long over all on new type V-8 pump). Place pullrod gasket over threaded end of pullrod. Place lower diaphragm protector washer with dished side down on pullrod above gasket. Place four layers of diaphragm material on pullrod (these must all be new—never use some old layers), lining up tabs on circumference of diaphragm with center line of flats on pullrod (4 cyl. pump), or so that center line of flats is midway between tabs and next nearest hole (V-8 pump)—see illustration. Place upper diaphragm protector on pullrod above diaphragm with dished side up. Assemble alignment washer, pullrod lock washer, and pullrod nut in order and tighten nut loosely with the fingers. Then hold diaphragm alignment washer from turning with special wrench No. V-83 and tighten pullrod nut securely. It is very important that the diaphragm should not turn or become wrinkled while tightening the nut and the position of the tabs must be checked after the nut is tight.

Remove diaphragm assembly from vise, clamp pump body in vise, place diaphragm spring in position in pump body with lower end over boss, dip diaphragm assembly and pullrod in kerosene and install in pump. The tabs on the diaphragm should be in line with the pullrod on the 4 cylinder pump and 30° to one side of the center line of the rocker arm on the new type V-8 pump. Push downward on the diaphragm compressing the spring until the flatted end of the pullrod is engaged in link and turn diaphragm 90° to correct position. If holes in diaphragm do not line up with holes in mounting flange when diaphragm assembly is turned 90°, turn slightly so that holes line up and tabs are at point nearest 90° from original position (see illustration).

Important. In assembling upper pump body, place upper pump body over diaphragm, insert cover screws and turn down cover screws loosely or until they touch the lock washers. Then press in on pump lever (4 cyl. pump), or use a small rod to press up on lower pump link (V-8 pump) so that diaphragm is at the lowest possible position. Hold diaphragm in this position and tighten the cover screws evenly and securely. This is necessary in order to secure the correct pump stroke.

Valve Assembly. See illustration for details of valve assemblies. Fibre valves are used. If valves stick, take out valve plugs and remove valves and valve springs. Wash valves and valve springs in gasoline, examine valve seats and see that valve seat is tight in pump body. Put a drop of oil on the valve before reassembling. The inlet valve spring is assembled under the valve and the outlet valve spring over the valve in the pump body. Use new gaskets under the valve plugs and tighten plugs securely. See that filter screen is not warped or distorted (use new type fiilter screen if necessary to replace filter), see that cover gasket and cover nut gasket are in good condition.

OPERATING TEST:—The pump may be tested by connecting a piece of rubber tubing approximately 30 inches long to inlet opening, immersing the end of the tubing in a pail of gasoline and operating the pump by hand. The pump should raise gasoline 30 inches and should deliver fuel at the outlet after not more than forty strokes. If fuel does not flow from the outlet after forty strokes, the pump will not perform satisfactorily on the car. The pump suction and pressure may be tested by holding the finger alternately over the inlet and outlet openings while the pump is operated. When installed on the car, the pump should prime itself and deliver fuel to the outlet in twenty seconds or less with the engine being turned over by the starter.



STEWART-WARNER FUEL PUMP

ELECTRIC MODEL 544

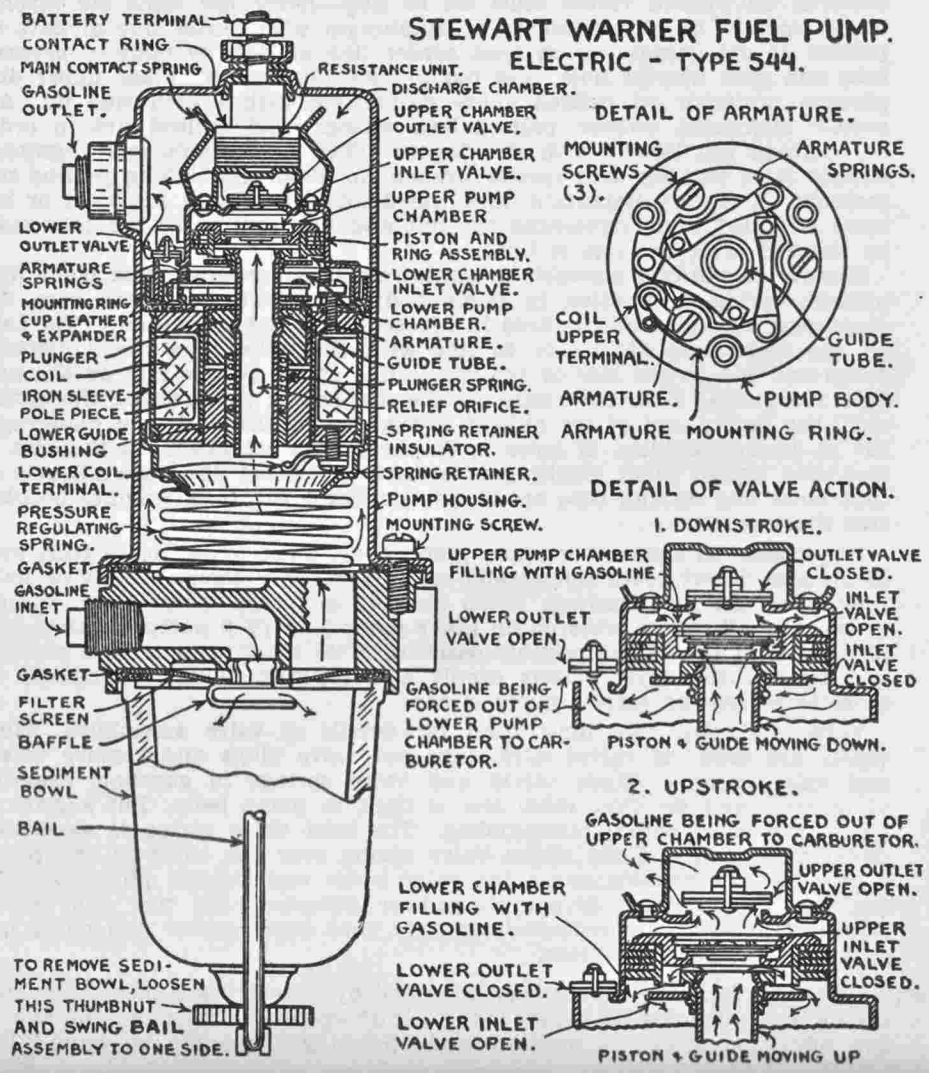
DESCRIPTION:—The Model 544 is a double-acting piston type pump. It has a maximum capacity of 25 gallons per hour and will pump more than 20 gallons per hour with a 12-inch lift and ten feet of 5/16 inch outside diameter tubing on the suction end and two feet of 5/16 inch tubing on the delivery end. At full capacity the current consumption is .8 ampere and under normal operating conditions when installed on an automobile engine the average current consumption will not be more than .35 amperes. The pump is furnished with ⅛ inch inlet and outlet (Model 544-A—Standard, Model 544-R—Marine) designed for use with 5/16 inch outside diameter tubing, or with ¼ inch inlet and outlet (Model 544-D—Standard, Model 544-N—Marine). Pumps are supplied for optionally specified voltages and Two-Gang, Three-Gang, and Four-Gang assemblies consisting of two, three, or four pumps hooked up to common inlet and outlet manifolds are available where added capacity is required.

INSTALLATION:—The pump can be located at any convenient point on the car but should not be placed near the exhaust or at a point more than 18" above the bottom of the fuel tank. The delivery line to the carburetor should be as short as possible and at no point should be above the carburetor inlet in order to avoid any possibility of vapor lock. The pump terminal on the top of the pump should be connected to the coil side of the ignition switch so that the pump is controlled by the switch. On cars using a coil switch or Electrolock where this is not possible, an auxiliary switch must be installed to control the pump. The pump mounting should be thoroughly cleaned so that a good ground is provided. Tubing of 5/16 inch outside diameter should be used for inlet and delivery lines, or ⅜ inch outside diameter tubing may be used for added capacity.

OPERATION:—See illustration for complete details of pump construction. The power unit and pumping unit form a single assembly within the pump casing which is insulated from the casing by means of a leather insulating washer. The pump piston is mounted on the upper end of the guide tube, which is mounted on the plunger within and slightly above the coil. When the piston is at the top of the stroke (as it will normally be with ignition turned off), the coil circuit is complete and, when the ignition is turned on, current flows from the terminal at the top through the contact ring and the contact springs, through the pumping chamber housing and pumping chamber mounting screws to the upper spool end in which these screws are threaded, and through the barrel (or pole piece) and the spring to the guide tube and plunger. The top surface of the plunger forms the lower contact. From the plunger current flows to the armature and then through the armature springs to the armature plate or mounting ring on which the coil upper terminal is mounted. The other end of the coil is grounded to the pump housing through the spring retainer and pressure regulating spring under the pump assembly. When the coil is energized, the plunger and guide tube are drawn down until the contact between the plunger surface and the armature is broken at the lower end of the stroke. This is the down stroke of the pump. When the coil circuit is broken the plunger spring forces the plunger and guide tube upward (the up stroke of the pump) until the contacts close at the end of the stroke when the cycle is repeated. When pumping at maximum capacity the pump makes approximately 1200 complete strokes per minute. See illustrations 1 and 2 under 'Detail of Valve Action' for complete explanation of gasoline flow and opening and closing of valves during down stroke and up stroke of pump piston.

Regulating Action. The amount of gasoline delivered to the carburetor is controlled by the carburetor float valve. Whenever the carburetor float bowl is filled with gasoline and the float valve closes, a back pressure is built up in the fuel line between the pump and the carburetor and in the down within the pump casing. This causes the contact springs on the top of the pump chamber housing to move down over the resistance unit or discharge chamber of the pump. When this pressure reaches 2½-3 pounds per square inch it is sufficient to balance the force of the plunger spring so that the plunger spring will not force the plunger and guide tube up and the pump will remain inoperative until the carburetor float valve opens when pumping will be resumed.

An additional regulating device is provided as a safeguard against failure of the inlet valve in the upper pump chamber (this would allow the pump to speed up as it would remove all back-pressure against the plunger spring). Whenever this occurs the pump will continue to operate until the pressure in the discharge chamber at the top of the pump reaches 4 pounds. A pressure of 4 pounds will balance the pressure of the regulating spring under the pumping assembly, causing the entire assembly to move



STEWART-WARNER FUEL PUMP

ELECTRIC MODEL 544

rheostat which is connected to the pump terminal. This inserts an increasing amount of resistance in the coil circuit and will slow down the pump action until the pressure in the discharge chamber exactly balances the regulating spring (4 pounds).

SERVICING OF PUMP:—The pump requires no attention in service and should not be disassembled except as an emergency measure. To disassemble the pump, take out the three mounting screws at the lower end of the pump housing, lift off the pump housing and the entire pump assembly will drop out of the housing. The pump assembly can be dismounted by taking out three screws holding pumping chamber on top of power unit, lifting off pump chamber, taking out three screws in armature mounting ring, lifting out piston assembly. This will free all serviceable parts. The valve in the center of the piston is held in place by a snap ring which can be pried out. The other valves may be removed by lifting the valve spring while holding the valve down.

Assembling Pump. Assemble parts in reverse order as given above. Check all valves, check piston rings and replace when clearance between rings and inner wall of pumping chamber is more than .015"—manufacturer states that ring life will average more than 2000 hours or more than 40,000 gallons so that rings should require replacement only infrequently. Make certain that piston assembly moves freely in coil bearing, see that contact springs make good contact with contact ring or terminal washer (springs should exert slight pressure on terminal washer), see that lower coil terminal spring exerts slight pressure on spring retainer. Replace all gaskets in reassembling pump.

TROUBLE SHOOTING:—Pump does not deliver sufficient fuel—check following points until trouble has been located and corrected:

1. Air leaks at sediment bowl. Examine gasket, see that bowl bears evenly against gasket and tighten bail nut securely.
2. Air leaks in supply line or at fittings. Check gasoline line, tighten all couplings and coat threads with white lead if necessary.
3. Tubing from pump to carburetor too small or fittings restricted. Use at least 5/16 inch outside diameter tubing and see that all fittings have inside diameter of not less than ¼ inch.
4. Discharged battery or poor electrical connections. Test battery and replace line.
5. Foreign matter or dirt in pump. Disassemble pump and wash all parts in gasoline.
6. Weak Plunger Spring. Replace spring if necessary.
7. Worn piston rings. Replace rings when clearance in pump chamber is more than .015 inch.
8. Sticking piston. Clean pump unit thoroughly and replace piston if necessary.
9. Valves leaking. Clean valve seats and replace valves if necessary.

Pump will not deliver any fuel. Make the following tests in order:

1. See if pump is operating by feeling pump housing. The vibration of the piston strokes should be perceptible. If not felt, connect ammeter in line at pump terminal and check current. If ammeter does not indicate current flowing through pump, check wiring to switch and battery.
2. If ammeter indicates correct current flow, check pump for binding or sticking piston. Clean pump thoroughly and replace assembly if necessary.
3. If ammeter indicates open circuit in pump, check pump ground and if necessary connect ground wire between pump body and frame. See that contact springs make good contact with terminal washer and if necessary bend contacts so they exert slight pressure on terminal washer.
4. Check the lower coil terminal. Spring must exert slight pressure on regulating spring retainer.
5. Check upper coil terminal on armature mounting ring and see that connecting wire is not broken. If necessary replace coil. See that coil is of correct type for voltage used (specified voltage for coil is stamped on bottom of coil case.
6. Check for foreign matter between armature and plunger. These surfaces form the contacts and any insulating material lodged between them will prevent pump from operating.
7. Check for short-circuited coil by touching one wire of test battery to the lower coil terminal and the other to the side of the pump unit. Sparks indicating a current flow mean that coil is short-circuited and must be replaced. Examine all insulators, see that they are correctly assembled and replace any found cracked or defective.

Pump will not shut off. Pump is designed to shut off or stop pumping whenever carburetor float valve closes but since it is impossible to prevent very slight leaks past the float valve and the pump valves, the pump will normally make several strokes per minute. When the pump operates rapidly with the engine stopped, check carburetor float valve, delivery line and fittings, for leaks. If the trouble is in the pump, examine sediment bowl gasket and tighten sediment bowl bail nut, tighten pump housing screws and replace gasket if necessary. Examine terminal at top of pump for leaks and if necessary replace insulators. If this does not correct trouble, disassemble pump and check valves and piston assembly.

SEDIMENT BOWL:—The glass sediment bowl at the bottom of the pump should be removed regularly by loosening the bail nut and swinging the bail to one side and water and sediment dumped. The filter screen directly above the bowl should be examined and cleaned if necessary. Examine gasket before replacing bowl and tighten nut securely.

STEWART-WARNER FUEL PUMP

MODEL 706

DESCRIPTION:—The Model 706 Fuel Pump embodies many of the features found on previous models and is particularly small and compact. The maximum fuel delivery of the pump is 22 gallons per hour when operating at 2000 R.P.M. but the pump delivers 18 gallons per hour operating at only 100 R.P.M. The variation in pressure throughout this range from 100 to 2000 R.P.M. is less than ¼ pound per square inch.

OPERATION:—Suction Stroke. The relative position of the moving parts and the flow of gasoline on the suction stroke is shown in the illustration. As the motor cam pushes lever 'B' toward the pump, the lever fulcrums at 'C', thereby pulling the pump diaphragm 'D' down. This creates a vacuum in chamber 'E'. Inlet valve 'F' opens, pressed down by a spring, and gasoline is drawn from glass reserve bowl 'G' through screen 'H'. The glass bowl is connected to the rear tank by inlet line 'J'. In operation the glass bowl will always be full of gasoline. The outlet valve 'K' is also pressed downward by a spring and will be closed during the suction stroke. Chamber 'L' is always open to the atmosphere through breather hole 'M', preventing back-pressure or vacuum in this chamber and ventilating it.

Delivery Stroke. When the low point on cam 'A' is on the side nearest the pump, pressure is exerted on lever 'B' by the lever spring 'N' causing the lever to follow the cam. The other end of the lever is engaged with the diaphragm but is free to slide in the diaphragm piston rod 'T'. On the end of the delivery stroke the lever is up as high as it will go, permitting the diaphragm spring 'O' to push the diaphragm up, forcing gasoline from chamber 'E' out through the outlet valve 'K' to the carburetor. The inlet valve 'F' is held closed by the spring during the delivery stroke. The air dome 'Q' relieves the excess pressure when the valve is closed and utilizes this pressure to increase the delivery rate by about 25 per cent. Maximum delivery pressure is 2½ pounds per square inch.

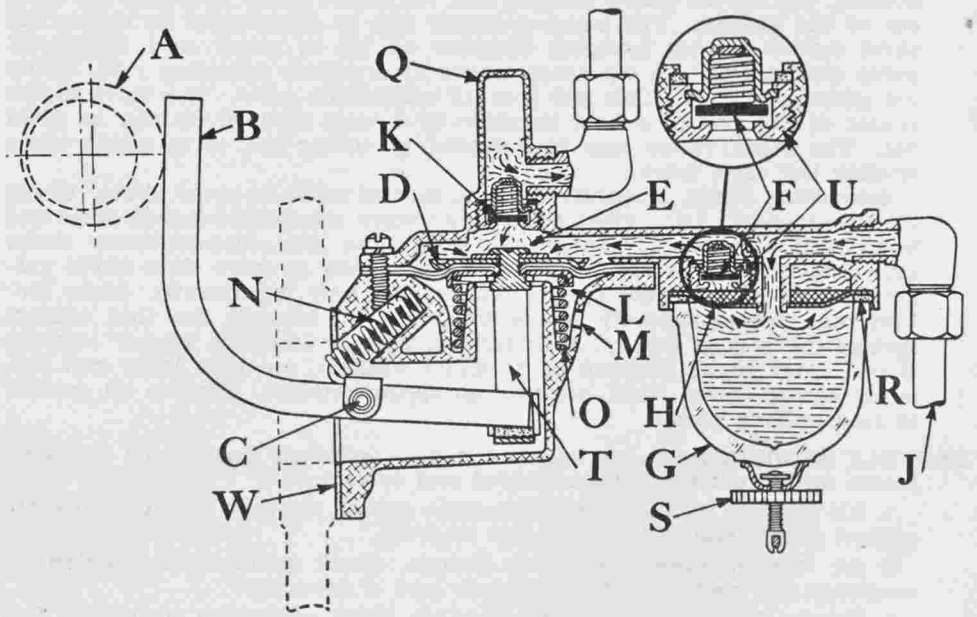
Control of Delivery. Maximum delivery rate of the pump is in excess of the motor requirements and the actual delivery of gasoline is controlled by the carburetor float valve which shuts off the flow of gasoline when the float bowl is full. When this occurs and the air dome pressure builds up to 2½ pounds, the pump diaphragm stops pumping and remains in the down position since the pressure of the gasoline in the pump chamber and carburetor line balances the pressure of the diaphragm spring. The pump lever continues to move with the rotation of the motor cam and slides on the piston rod 'T'.

TROUBLE SHOOTING:—On the Car. Do not remove pump from engine until the following points have been checked:

1. See that gasoline tank on car is not empty.
2. Note if gasoline has been coming out of breather hole 'M'. This will indicate a leak due to punctured diaphragm or at the piston rod.
3. Examine sediment bowl 'G' and screen 'H'. Empty water in bowl, clean screen. In replacing bowl be sure that gasket is intact, that bowl is flat on its seat when nut 'S' is drawn up. A leak at this point will cause erratic pump action and retard delivery. Soak new gasket in lubricating oil.
4. Check for loose connection or broken lines. Disconnect gasoline supply line at both ends and blow through it to be sure that it is not clogged.
5. Disconnect delivery line at pump, observe whether gasoline spurts out of pump outlet when engine is cranked with the starter. If gasoline delivery is satisfactory at pump and carburetor bowl is empty, see that delivery line is not clogged, and check carburetor float valve.

Testing Pump off the Engine. If tests on car indicate that pump is not operating satisfactorily, remove pump for bench testing. Attach a short piece of rubber tubing to inlet and delivery connections of pump, immerse inlet tube in pail of gasoline, operate pump by hand. Gasoline should spurt out of delivery tubing in approximately fifteen strokes of the lever. If pump does not operate, check as follows:

1. Examine check valves 'F' and 'K'. Some gasolines form gummy deposits on the valves and springs, preventing spring action and proper seating of valves. Clean valve seats and springs, replace valves with glossy side down. Be careful not to stratch valve seats. In replacing valve nut or cage 'U' always use a new gasket and be sure to draw nuts up tight.
2. Examine vent hole 'M' and clean out if necessary. It must be kept open.
3. Repeat test as given above for hand operation of the pump.



SERVICING PUMP:—Diaphragm. If pump cannot be made to operate, disassemble and examine diaphragm 'D' and diaphragm spring 'O'. A punctured diaphragm or weak diaphragm spring should be replaced. To remove diaphragm, drive out fulcrum shaft pin 'C'. Replace diaphragm and stem assembly as a unit. In reassembling pump be sure to stake ends of fulcrum pin hole after pin has been replaced in order to prevent pin working out in service. If it is not possible to stake pin in place, use Part No. 65043 snap ring and No. 65044 fulcrum shaft. The diaphragm is held in place on the piston rod by a spinning operation. Assembly must be replaced as a unit.

Assembling Pump. In replacing the diaphragm, clamp pump body in a vise, line up holes in diaphragm and pump body, set the pump cover on top of the diaphragm, push in far enough so that cover screws can be turned down not more than three threads. Then pull diaphragm down by pushing lever in toward pump as far as it will go, hold lever in this position and tighten cover screws. This is important for correct operation of pump.

Air Dome. The air dome is cast integrally with the pump cover and can not be removed. This eliminates possibility of leakage at air dome threads.

Valve Assemblies. Inlet and outlet valves are the same and are constructed as assemblies in a retaining nut or valve cage which is screwed in place in the pump castings. In servicing valves the entire valve assembly should be replaced although if the seat is satisfactory it is possible to replace only the valve or spring. In assembling the valve cage always use a new gasket and see that the cage is screwed tightly into the casting.

HEAT CONTROLS

TYPES:—On most cars some device is provided to heat the fuel mixture after it leaves the carburetor. The usual practise is to jacket the riser above the carburetor (updraft installations) or the central portion of the intake manifold (downdraft installations) and deflect part of the exhaust gases through this passage. In most cases a valve is provided to control the amount of the gasses passing through this passage and the position of this valve is adjusted by means of a 'heat control' button on the instrument board (manual dash adjustment), (2) is interconnected with the throttle (manual throttle adjustment), (3) is adjustable at the manifold for seasonal changes (manual engine adjustment), (4) the valve is controlled by an automatic thermostatic spring and requires no attention.

In all cases where manual adjustment is provided, the position of the valve should be checked when the carburetor is checked or adjusted and the valve setting should be changed if it does not correspond with the average temperature range of the car operation. Where the heat control is placed on the dash and is properly an operating adjustment no attention is necessary except where the heat control must be operated in adjusting the carburetor (see individual carburetor instructions). Some types of automatic thermostatic require seasonal adjustment. Several of these types are described below.

PONTIAC HEAT CONTROL

DESCRIPTION:—Pontiac control consists of a thermostatic spring assembled on the heat control valve shaft under an adjustable shutter. The thermostatic spring closes the control valve as the engine warms up, decreasing the heat applied to the fuel mixture. One lug of the thermostat cover is marked 'top' and should be placed at the top when the cover is mounted on the manifold.

ADJUSTMENT:—Both the position of the shutter and the location of the thermostatic spring hook stud are adjustable for summer and winter temperatures. The shutter should be 'open' for winter operation and 'closed' for summer operation. In the closed position the shutter is not entirely closed but should be rotated toward the closed position until it is against the stop. The stud on which the end of the thermostatic spring is hooked can be located in one of three holes provided for this purpose. For winter operation the stud should be located in the right hand end hole, providing maximum spring tension. For summer operation the stud should be located in the center mounting hole. For extremely hot temperatures the stud should be placed in the left hand end hole, providing minimum spring tension.

BUICK HEAT CONTROL

DESCRIPTION:—On Buick models the 'damper' or heat control valve is offset so that it can be opened by the exhaust gas pressure as the thermostatic spring unwinds. One end of the thermostatic spring is hooked through a slot on the valve shaft and the other end is hooked over a stud. The thermostatic spring is enclosed within a cover provided with a shutter. This shutter is connected to the throttle control so that the shutter is opened proportionally to the throttle opening at car speeds from 30 to 70 M.P.H. Cold air from the fan is directed through a tunnel against the shutter and cools the thermostatic spring when the shutter is opened so that more heat is applied at part-throttle positions. At wide open throttle the shutter is closed.

ADJUSTMENT:—The operation of the heat control mechanism is entirely automatic and no seasonal or other attention is required. The normal setting of the thermostatic spring is approximately ½ turn wound up so that the valve is held in the horizontal or 'heat on' position at normal room temperatures. Thermostatic spring tension can be checked by using a special testing arm designed to be clamped on the rear end of the control valve shaft (after the cotter pin has been removed). The testing arm should be made with a hole exactly 1½" from the center of the control valve shaft hole so that a spring scale can be attached at this point. With the spring scale attached at this point the scale reading when the control valve just begins to open against the tension of the thermostatic spring should be 1 lb. 7 oz.-1 lb. 10 oz. (Models 50, 60) or 1 lb. 11 oz.-1 lb 14 oz. (Models 80, 90). This test can only be made when the temperature of the thermostatic spring is 70°F. and the engine must be allowed to cool off to this temperature or the heat control and entire manifold must be chilled to this temperature by means of an air hose.

STUDEBAKER HEAT CONTROL

DESCRIPTION:—The Studebaker heat control consists of a thermostatic spring latch which engages a roller on the heat control valve lever and holds the heat control valve closed when the engine is cold. As the engine warms up thermostatic spring bends down and releases the heat control valve lever. Heat control valve is offset and is controlled by the exhaust gas pressure after the lever is released.

ADJUSTMENT:—With the engine cold so that the valve control spring is tight against the reinforcing strip and the valve is latched and against the stop, the clearance between the control lever roller and the control spring latch should be .005". This clearance is adjustable by loosening the screws and shifting the control spring (screw holes are elongated).

CARTER CARBURETORS

150-S—CHEVROLET INDEPENDENT, SERIES AE (1931).

159-S—DE SOTO SIX, MODEL CK (1931).

188-S—DE SOTO SIX, MODEL SA (1931).

200-S—DE SOTO SIX, MODEL SA (1931).

181-S—DODGE SIX, MODEL DH (1931).

197-S—DODGE SIX, MODEL DH (1931).

215-S—DODGE SIX, MODEL DH (1931), DL (1932).

147-S—NASH SIX, MODEL 6-60 (1931).

147-SA—NASH SIX, MODEL 9-60 (1931-32).

TYPE:—Plain tube updraft type with throttle operated accelerating pump and economizing device (metering rod). Multiple jet nozzle (main discharge nozzle) is fed by fuel flowing through well jet. Discharge from multiple jet nozzle is controlled by metering rod which is lifted in the nozzle as the throttle is opened, providing maximum economy for partial throttle operation and full power with wide open throttle. All jets are 'fixed' type (non-adjustable). Fuel for idling is taken from float chamber through low speed jet tube and discharged through a port in the carburetor wall opposite the throttle edge (closed throttle position). Idle dischrge passage has an air bleed hole regulated by the idling adjusting screw. Idle adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLE ADJUSTMENT:—Air bleed type operating on air. Engine must be thoroughly warmed up before idling adjustment is made (on Nash models pull out heat control button on dash and leave in this 'Heat On' position while warming up engine and adjusting carburetor). With engine warm and running, close throttle, adjust throttle stop screw if necessary to secure correct idling speed of 300 R.P.M. or approximately 5-6 M.P.H. Adjust adling adjusting screw by turning screw out until engine begins to miss (mixture too lean), then turn screw in or clockwise slowly until engine fires smoothly. Idling screw operates on air and should be turned out or counter-clockwise to secure leaner mixture and in or clockwise for richer mixture. After completing adjustment, readjust throttle stop screw to secure correct idling speed. Do not idle engine below 300 R.P.M. or 5 M.P.H. Correct idling screw settings are as follows:

Car Model	Carburetor Model	Idling Setting
Chevrolet	150-S	5/8-1 1/4 turn open
De Soto	159-S	3/4-1 1/4 turn open
De Soto	188-S	1/2-1 turn open
De Soto	200-S	3/4-1 1/4 turn open
Dodge	181-S	1/2-1 turn open
Dodge	197-S, 215-S	3/4-1 1/4 turn open
Nash	147-S, 147-SA	1/2-1 turn open

If correct idling adjustment cannot be secured, take out idling tube (in float bowl) and clean with compressed air. See that soldered joints on tube are tight and that tube is seated airtight in casting at top and bottom.

PERFORMANCE AND ECONOMY:—Multiple jet nozzle fuel supply is metered by main well jet, which is not adjustable. Well jet can be changed to secure leaner-than-standard fuel mixtures (see specifications). This is done ordinarily to compensate for special fuels or operating conditions such as high altitudes. On Model 150-S a special lean low speed jet tube has been developed for use on cars in door-to-door delivery service where engine is allowed to idle for considerable periods. This jet supplies a leaner-than-standard mixture at low speeds.

Metering rod attached to throttle restricts discharge of multiple jet nozzle with throttle partly open. When throttle is opened wide, metering rod is raised in nozzle, permitting greater fuel discharge for full power operation. Metering rod is not adjustable and requires no attention.

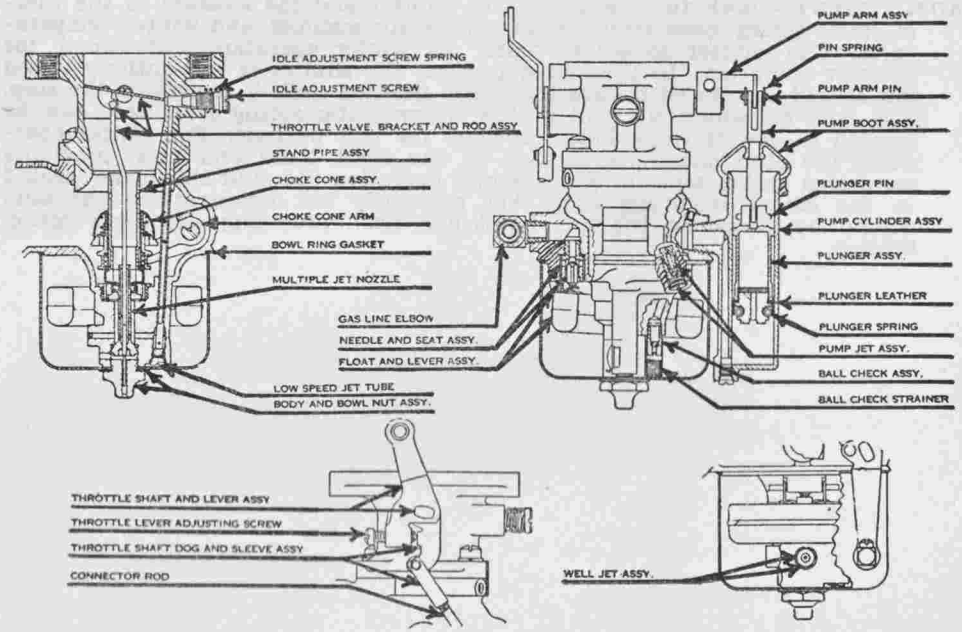
ACCELERATING PUMP:—Low pressure delayed action type. Fuel is drawn into pump cylinder through ball check strainer and ball check valve (in lower part of float chamber) when throttle is closed and discharged through pump jet into mixing chamber when throttle is opened. Pump arm on throttle valve shaft has two or three holes for engagement of pump arm pin to provide varied pump stroke. Center hole in pump arm (when provided) should be used for normal temperature ranges. Pump pin should be engaged in outer hole (marked 'W') providing maximum pump stroke for winter driving. Inner hole (marked 'S') providing minimum pump stroke should be used for summer driving, high altitudes, or high test gasoline.

NOTE:—If increased resistance on foot throttle is noticed, take out pump discharge jet and clean with compressed air or replace jet. Poor acceleration may be caused by incorrect pump setting (above), damaged or worn pump plunger leather, loose pump cylinder, bent pump arm, clogged ball check strainer or ball check assembly. Ball check assembly can be removed and cleaned with compressed air. If pump plunger is removed from pump cylinder, a loading tool should be used to install the plunger in order to avoid damaging the plunger leather.

FLOAT LEVEL:—To check float level, take out float bowl nut, remove float bowl, invert carburetor, remove gasket, measure distance from gasket seat (machined surface on carburetor body) to nearest point on float (top when not inverted) at a point opposite needle valve. Correct float levels on all models are as follows:

Car Model	Carburetor Model	Float Level
Chevrolet	150-S	3/4"
De Soto	159-S, 188-S, 200-S	11/16"
Dodge	181-S, 197-S, 215-S	11/16"
Nash	147-S, 147-SA	11/16"

Float level can be adjusted by bending lip of float lever.



CHOKE:—Compensating cone type consisting of a cone-shaped restriction on the standpipe which is raised in the venturi by the choke cone arm, increasing the air flow through the standpipe and the relative fuel discharge of the multiple jet nozzle. Choke lever and throttle lever on all models except 150-S (Chevrolet) are interconnected so that throttle valve is opened slightly when carburetor is fully choked. Connecting lever will not require adjustment and setting should not be disturbed.

CARTER CARBURETORS

156-S—PLYMOUTH, MODEL 30-U (1931).

209-S—PLYMOUTH, MODEL PA (1931).

TYPE:—These types are not interchangeable. Carburetors are plain tube, updraft type similar to other Carter updraft models except for design and adjustment of accelerating pump (see instructions below). Idling adjustment and accelerating pump setting are the only points requiring attention.

IDLING ADJUSTMENT:—Air bleed type operating on air. Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, close throttle, retard spark control (30-U), adjust throttle stop screw if necessary to secure correct idling speed of 300 R.P.M. Turn idling adjusting screw out or counter-clockwise until engine begins to miss (mixture too lean), then turn screw clowly in or clockwise until engine fires smoothly. Correct setting of idling screw should be ½-1 (156-S) or 1-1½ (209-S) turns open. Idling screw operates on air and should be turned out to secure leaner mixture and in for richer mixture. Readjust throttle stop screw after completing idling adjustment if necessary to secure correct idling speed. Do not idle engine below 300 R.P.M.

If correct idling adjustment cannot be secured, take out idling tube (low speed jet tube) and clean with compressed air. See that soldered joint on tube is tight and that tube is seated airtight in body casting at top and bottom. If necessary replace with new tube of same characteristics.

PERFORMANCE AND ECONOMY:—All jets are 'fixed' type (non-adjustable). Well jet can be replaced to secure cleaner-than-standard mixtures. This change is made ordinarily to compensate for special fuels or operating conditions such as high altitudes. Economizing device (metering rod attached to throttle which is raised in multiple jet nozzle as throttle is opened) is not adjustable and will not require attention.

ACCELERATING PUMP:—Accelerating pump discharges fuel through pump jet into mixing chamber. Pump discharge is controlled by needle valve in carburetor body casting directly below pump cylinder. For winter operation, needle valve should be ⅛-¼ turn open (turn needle valve to right until it is seated, then back off ⅛-¼ turn). For summer driving, needle valve should be 1-1½ turns open.

NOTE:—If increased resistance on foot throttle is noticed, take out pump discharge jet and clean with compressed air or replace jet. Poor acceleration may be caused by incorrect pump setting (above), damaged or worn pump plunger leather, loose pump cylinder, bent pump arm, or clogged ball check strainer or valve. If pump plunger is removed from pump cylinder, use loading tool to install plunger in order to avoid damaging plunger leather.

FLOAT LEVEL:—To check float level, take out float bowl nut, remove float bowl, take off bowl gasket, invert carburetor, measure distance from gasket seat (machined surface) to nearest point on float (top of float when not inverted) at a point opposite needle valve. This distance should be 11/16". Float level can be adjusted by bending lip of float lever.

CHOKE:—Compensating cone type consisting of a cone shaped restriction which rests normally on the lower end of the standpipe and is raised in the venturi by the choke cone arm when the choke control button is pulled out. This increases the air flow through the standpipe and the fuel discharge of the multiple jet nozzle. Choke lever and throttle lever are interconnected so that throttle is opened slightly whn carbureteor is choked. Connecting lever should not require adjustment and should not be disturbed.

167-S—NASH EIGHT, SERIES 8-70 (1931).

TYPE:—Superseded by Model 186-S. Plain tube downdraft type with throttle operated accelerating pump and economizer. This type has some characteristics of updraft types, such as concentric float bowl and compensating cone type choke. Idle adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLE ADJUSTMENT:—Air bleed type operating on air. Engine must be warmed up before adjustment is made. Pull out heat control button on instrument panel and leave in this 'Heat On' position in warming up engine and while adjusting carburetor. With engine warm and running, close throttle, adjust throttle stop screw if necessary to secure correct idling speed of 5 M.P.H. Turn idling adjusting screw out or counter-clockwise slowly until engine begins to miss (mixture too lean), then turn screw in or clockwise until engine fires smoothly. Correct setting is approximately ¾ turn open. Idling screw operates on air and should be turned out to secure leaner mixture and in for richer mixture. Readjust throttle stop screw after completing idling adjustment, if necessary, to secure correct idling speed of 5 M.P.H. (car speed in high gear).

ACCELERATING PUMP:—Accelerating pump is operated by throttle shaft through a vertical pump rod and a cross shaft on the top of the carburetor. Pump lever on cross shaft has two holes for engagement of pump link pin. Pin should be engaged in end hole marked 'W', providing maximum pump stroke for winter driving or cold temperatures. Engage pin in inner hole marked 'S' for summer driving or warm temperatures.

PERFORMANCE AND ECONOMY:—All jets are 'fixed' type (non-adjustable). Economizer consists of metering rod which restricts fuel flow through metering jet with throttle partly open. When throttle is opened, metering rod is raised in metering jet, permitting greater flow for full power operation. Metering rod is attached to pump cross shaft on top of carburetor and is operated by the throttle. It is not adjustable.

FLOAT LEVEL:—To check float level with carburetor disassembled, take off gasket on float bowl cover, invert cover and measure distance from gasket seat (machined surface) on cover to nearest point of float (top when not inverted) at a point opposite the needle valve. This distance should be ⅝". Float level can be adjusted by bending lip of float lever.

212-S —CHEVROLET CONFEDERATE, SERIES BA (1932).

222-SA—CHEVROLET TRUCK, SERIES BB (1932).

235-S —CHEVROLET CONFEDERATE, SERIES BA (1932).

259-S —CHEVROLET MASTER SIX, SERIES CB (1933).

260-S —CHEVROLET STANDARD SIX, SERIES CC (1933).

243-S —ESSEX TERRAPLANE SIX, SERIES K (1932), SERIAL NOS. 350000 TO 367858.

267-S —ESSEX TERRAPLANE SIX, SERIES K, KU (1933), SERIAL NOS. 367858 UP.

261-S —ESSEX TERRAPLANE EIGHT, SERIES KT (1933).

258-S —HUPMOBILE SIX, SERIES K (1933).

186-S —NASH EIGHT, SERIES 8-70 (1931).

255-S —PONTIAC EIGHT, SERIES 601 (1933), BEFORE SERIAL NO. 778380.

266-S —PONTIAC EIGHT, SERIES 601 (1933), AFTER SERIAL NO. 778380.

280-S PONTIAC EIGHT, SERIES 601 (1933), AFTER SERIAL NO. 827801.

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and economizing device (metering rod). Main nozzle is located at an angle in the upper or primary venturi with a secondary and a main venturi directly below this point in the mixing chamber. Fuel for main nozzle is metered by metering jet and metering rod. Accelerating pump discharges through a pump jet against the wall of the secondary venturi. Idle adjustment and accelerating pump setting are the only points requiring attention.

IDLE ADJUSTMENT:—Air bleed type operating on air. Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, close throttle, adjust throttle stop screw if necessary to secure correct idling speed of 300 R.P.M. or approximately 5-6 M.P.H. Turn idling adjusting screw out or counter-clockwise until engine begins to miss (mix-

CARTER CARBURETORS

ture too lean), then turn screw slowly in or clockwise until engine fires smoothly. Idling screw operates on air and should be turned out to secure leaner mixture and in for richer mixture. Correct idling settings are as follows:

	Idling Screw	Idling Speed
Chevrolet (all)	½-1 turn open	300-350 R.P.M.
Terraplane 6 (243-S)	⅝-1⅛ turns open	300 R.P.M. or 5 M.P.H.
Terraplane 6 (267-S)	¾-1¼ turns open	300 R.P.M. or 5 M.P.H.
Terraplane 8	⅜-1 turn open	300 R.P.M. or 5 M.P.H.
Hupmobile	⅜-1 turn open	
Nash	1-1½ turns open	5 M.P.H.
Pontiac	⅝-1⅛ turns open	300 R.P.M.

Check idling speed after completing idling adjustment and readjust throttle stop screw if necessary. Do not idle engine below 300 R.P.M. If correct idling adjustment cannot be secured, remove low speed jet tube and clean with compressed air. See that tube is seated airtight in casting at top and bottom. If necessary replace with new tube of same characteristics.

ACCELERATING PUMP:—Pump arm (on countershaft under dust cover) has three holes for engagement of pump plunger connector link to provide varied pump stroke. Medium setting with pin engaged in center hole is correct for ordinary temperature ranges and standard gasoline. Engage pin in inner hole (short pump stroke) for operation in hot climates, high altitudes, or with high test gasoline. Upper hole (long stroke) should be used for extremely cold temperatures. Accelerating pump countershaft should be lubricated at 5000 mile intervals. Take out dust cover screw (on top of cover) and fill threaded hole with a good grade of graphite grease.

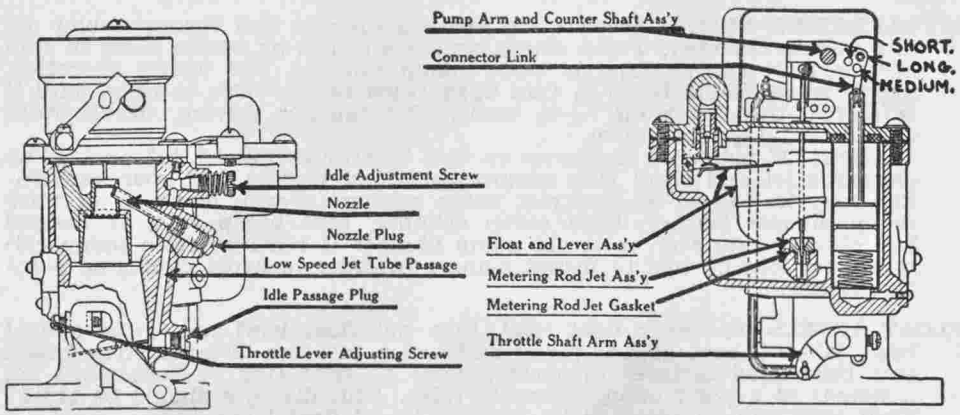
METERING ROD (ECONOMIZER):—Fuel is metered by a two or three step metering rod being raised in the metering jet as the throttle is opened, allowing an increased fuel flow through the jet. No adjustment is provided but metering rods can be changed to secure leaner-than-standard fuel mixtures to compensate for special fuel or operating conditions such as high altitudes. To change metering rod, take off dust cover, take off pin spring, turn rod one-quarter turn to left to disengage pump arm, lift rod out, being careful not to lose disc on rod. Insert new rod (with disc in place), holding rod vertically so that lower end of rod will enter jet in float chamber. Turn rod one-quarter turn to engage pin on pump arm (throttle must be closed). If rod is correctly assembled no difficulty will be experienced in connecting the rod to the pin and rod will hang vertically. Replace pin spring and dust cover.

NOTE:—Metering rod setting should be checked whenever carburetor is serviced or when rods are changed. This will require a special gauge, Part No. T109-15 (2.797″). To check rod setting, remove dust cover, disengage upper end of throttle connector rod, back off throttle lever adjusting screw so that throttle closes tight, remove metering rod (see above), insert gauge in place of rod so that beveled end is seated in metering rod jet and gauge is held in vertical position. See that metering rod pin rests on top of gauge with throttle closed and upper end of connecting rod centering freely in the hole in the pump arm. If setting is not correct, bend lower end of throttle connector rod so that upper end centers freely in hole. Replace metering rod and dust cover and adjust throttle stop screw for correct idling speed.

CHOKE:—On all models except Chevrolet and Nash (186-S, 212-S, 222-SA, 235-S, 259-S, 260-S) choke valve and throttle valve are interconnected so that throttle is opened slightly when carburetor is partially choked. This provides a fast idle during warming up period. Throttle returns to closed position when choke valve is fully open. Carburetor models 255-S, 261-S, 267-S are fitted with auxiliary relief poppet valves on the choke valve to prevent over-choking. Models 186-S, 212-S, 222-SA, 235-S, 259-S, 260-S, 243-S, 266-S have one side of the choke valve hinged and controlled by a spring so that when the engine begins to fire, this hinged portion of the valve acts as an automatic air valve during the warming up period. The hinged portion of the valve is held closed by a trigger lock when carburetor is fully choked and choke valve must be opened slightly to release this lock. Adjust valve lip under lock pawl so that clearance between valve edge and carburetor wall is .008-.012″ (259-S, 260-S), or .058-.068″ (266-S) with choke in fully closed position.

FLOAT LEVEL:—To check float level, take off float bowl cover, remove gasket, invert cover, measure distance from gasket seat (machined surface) on cover to nearest point on float (top when not inverted) at a point opposite the needle valve. Float level can be reset by bending lip of float lever. Correct float level settings are as follows:

Car Model	Carburetor Model	Float Level
Chevrolet Truck	222-SA	⅜″
Chevrolet Confederate BA	212-S, 235-S	⅜″
Chevrolet Master Six CB	259-S	⅜″
Chevrolet Standard Six CC	260-S	⅜″
Terraplane Six	243-S, 267-S	⅜″-13/32″
Terraplane Eight	261-S	½″
Hupmobile Six 321	258-S	½″
Nash Eight 8-70	186-S	⅝″
Pontiac Eight	255-S, 266-S	½″
Pontiac Eight	280-S	⅜″



CHEVROLET SPECIAL INSTRUCTIONS:—The manufacturer advises that the Model No. 235-S carburetor used on 1932 Chevrolet cars can be improved in performance so as to equal the 1933 model by installing the following parts:

Pump Arm and Countershaft Assembly	53A-64S
Metering Rod Spring	61-75
Metering Rod Jet and Gasket Assembly	120-41S
Metering Rod (Standard)	75-67
Or	
Metering Rod (1 Size Lean)	75-77
Metering Rod (2 Sizes Lean)	75-78
Metering Rod (1 Size Rich)	75-79

CARTER (B & B) CARBURETORS

6-A1, 6-B1, 6-B2—CHRYSLER SIX, MODEL CI (1932).

6-B, 6-B1—DE SOTO SIX, MODEL SC (1932, TO MOTOR NO. 17543.

6-B2—DE SOTO SIX, MODEL SC (1932), AFTER MOTOR NO. 17543.

6-B2—DODGE SIX, MODEL DL (1932) (VACUUM CLUTCH CONTROL).

6-A2—DODGE SIX, MODEL DL (1932) (WITHOUT VACUUM CLUTCH CONTROL).

4-A2—PLYMOUTH, MODEL PB (1932), MOTORS NOS. PB-1001 TO 32668.

4-A3—PLYMOUTH, MODEL PB (1932), MOTORS NOS. PB-32669 UP.

TYPES:—Plain tube updraft type with throttle operated accelerating pump and vacuum operated 'step-up' device (economizer). Fuel for main nozzle is metered by main metering jet (under float bowl) and power orifice or step-up jet (for high speed or wide open throttle operation with step-up valve open). There are two idling ports, a lower or non-adjustable port (below the throttle), and an upper port (above throttle in closed throttle position) which is controlled by the idling adjustment screw. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only point requiring attention.

IDLE ADJUSTMENT:—Needle valve type operating on fuel mixture. Engine must be warmed up before adjustment is made. With engine warm and running, close throttle, adjust throttle stop screw so that engine idles at approximately 300 R.P.M. or 6 M.P.H. Turn idling adjusting screw in or clockwise until engine begins to miss (mixture too lean), then turn screw slowly out or counter-clockwise until engine fires smoothly. Idling screw controls fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Correct setting should be ¼-1 turn open (Chrysler, De Soto, Dodge) or ½-1¼ turns open (Plymouth). Check idling speed after completing adjustment and readjust throttle stop screw if necessary. Do not idle engine below 300 R.P.M.

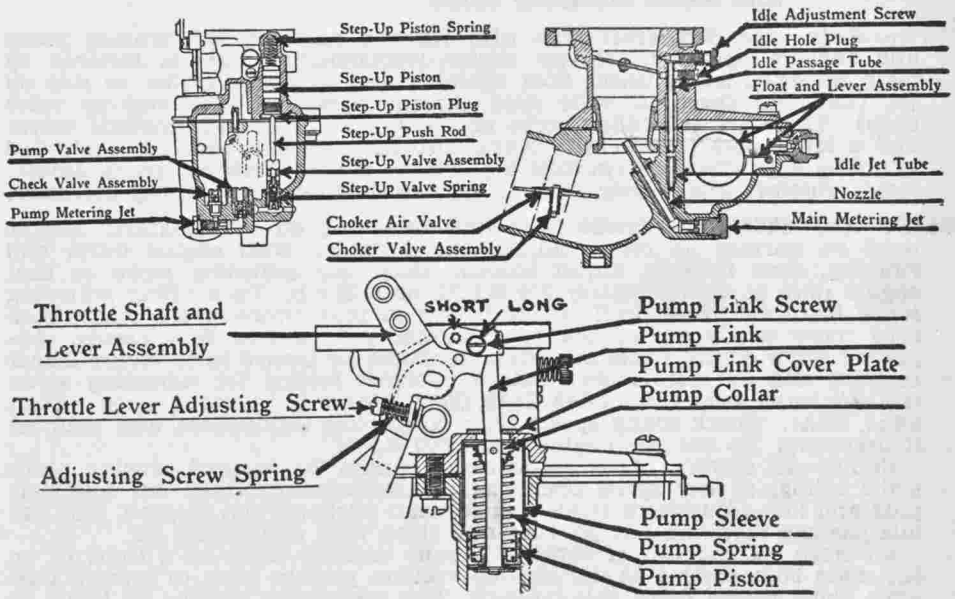
NOTE:—If correct idling adjustment cannot be secured or engine stalls while idling, take out idling adjustment screw and lower idle port plug and see that ports are clear, remove idle passage tube and idle jet tube and clean with compressed air.

ACCELERATING PUMP:—Low pressure delayed action type. Accelerating pump is connected to throttle shaft lever and discharges fuel through main nozzle when throttle is opened. Pump discharge is metered by pump metering screw in body casting adjacent to lower end of pump cylinder (4A2, 6A1, 6B, 6B1) or by pump discharge jet in pump valve cage assembly (4A3, 6A2, 6B2). Pump metering screw hole is closed with a plug on models using a discharge jet. Throttle lever has two holes for engagement of pump link screw to provide varied pump stroke.

Adjustment:—Pump link screw should be engaged in outer hole in throttle lever (long pump stroke) for winter driving or cold temperatures. Engage screw in inner hole (short pump stroke) for summer driving (hot climates), high altitudes, or high test gasoline.

NOTE:—If acceleration is unsatisfactory, check pump setting (above), remove main metering jet, pump metering jet, check valve assembly, and pump valve assembly and clean with compressed air.

PERFORMANCE AND ECONOMY:—All jets are 'fixed' type (non-adjustable). Main metering screw is flow-tested and rated in accordance with capacity. It should not be gauged for size with wire drills. Main metering screw can be changed to secure leaner-than-standard fuel mixtures to compensate for special fuels or operating conditions such as high altitude (see Specifications). If performance and economy are not satisfactory, examine step-up valve cage assembly, see that ball check is free and seats properly, that valve cage is screwed tight against its seat, that step-up piston is not binding, and that step-up push rod moves freely in upper and lower guides. Check float level.



FLOAT LEVEL:—To check float level, take off float bowl cover (upper carburetor body casting), remove gasket, hold lip of float lever firmly against needle valve, place a metal rule across top of float bowl and check distance from top of float (not float seam) to top of bowl edge. Float should be flush with top of bowl or not more than 1/32" below bowl top. Float level can be adjusted by bending lip of float lever (not bracket). To raise float level, bend lip of lever toward needle valve. To lower float level, bend lip of float lever toward float.

CHOKE:—Carburetors have interconnected choke valve and throttle valve levers so that throttle valve is opened slightly when carburetor is choked. Throttle is returned to closed position when choke valve is opened wide. Choke valve is fitted with a compensating or relief poppet valve to prevent overchoking. Adjust choke linkage so that choke valve is fully closed with choke control button pulled all the way out and wide open with choke button pushed in.

CARTER (B & B) CARBURETORS

C6A—PLYMOUTH SIX, MODEL PC (1933), MOTORS PC-1311 TO PC-31413.
C6A2—PLYMOUTH SIX, MODEL PC (1933), MOTORS PC-31414 TO PC-81145.
C6A3—PLYMOUTH SIX, MODEL PC (1933), MOTORS PC-81145 TO PC-87788.
PLYMOUTH DE LUXE, MODEL PD (1933), MOTORS 37121 TO 60489.
C6A4—PLYMOUTH SIX, MODEL PC (1933), MOTORS PC-87788 UP.
PLYMOUTH DE LUXE, MODEL PD (1933), MOTORS 60489 UP.
***E6A—DE SOTO SIX, MODEL SD (1933).**
***E6A3—DE SOTO SIX, MODEL SD (1933, MOTORS SD-11788 UP.**
***E6A4—DE SOTO SIX, MODEL SD (1933), MOTORS SD-12346 UP.**
E8A—DODGE EIGHT, MODEL DO (1933).
***With Sisson Automatic Choke.**

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and vacuum operated 'step-up' device (economizer). Fuel is metered by main metering screw under float chamber and by power orifice or step-up jet (for high speed or wide open throttle operation with step-up valve open). There are two idling ports, an upper port (above the throttle valve) and a lower port (below valve when throttle is closed) which is controlled by idling adjustment screw. Idle adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type operating on fuel mixture. Engine must be warmed up before adjustment is made. With engine warm and running, close throttle, adjust throttle shaft dog adjusting screw so that engine idles at approximately 300 R.P.M. or 6 M.P.H. Turn idling adjusting screw in or clockwise until engine begins to miss (mixture too lean), then turn screw slowly out or counter-clockwise until engine fires evenly. Adjusting screw controls fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Correct setting for adjusting screw is ½-1¼ turns open (C6A, C6A2, C6A3, C6A4, E6A) or ⅝-1¼ turns open (E6A3, E6A4, E8A). Check idling speed after completing adjustment and readjust if necessary. Do not idle engine below 300 R.P.M.

NOTE:—If correct idling adjustment cannot be secured, engine stalls while idling, or low speed operation is unsatisfactory, take out idle hole plug and idle adjustment screw and see that ports are not clogged, take out idle passage tube and idle jet tube and clean with compressed air.

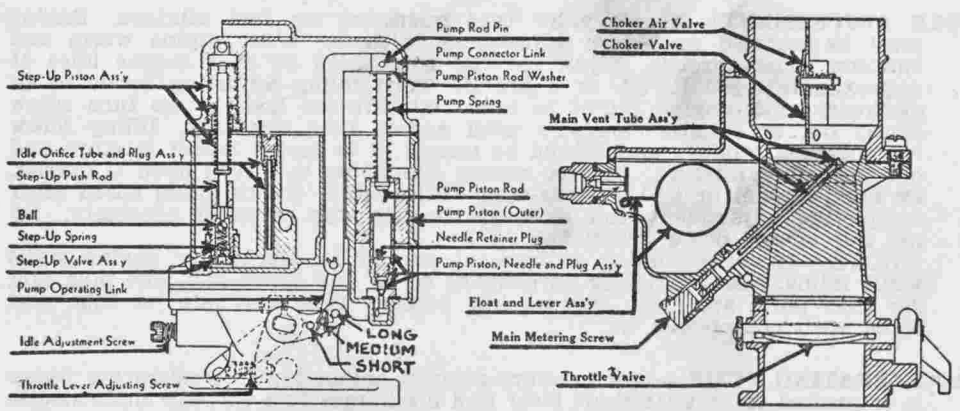
Air horn casting (upper carburetor body casting) must be a tight fit on the main body casting at the step-up vacuum passage joint to prevent gasoline being drawn down this passage. This may cause stalling at idling or low speeds. Where this trouble is experienced the manufacturer advises that a step-up passage bushing, Part No. 38A-26, be installed in the main body casting and the air horn casting reassembled with TWO Part No. 121-17 body gaskets. The bushing must be in perfect alignment with the passage in both castings.

ACCELERATING PUMP:—Accelerating pump is connected to throttle shaft lever and discharges fuel through main nozzle (C6A, C6A2, E6A, E8A) or through a separate pump jet located in the venturi (C6A3, C6A4, E6A3, E6A4) when the throttle is opened, supplying the extra fuel required for acceleration. Pump lever on throttle valve shaft has two or three holes for engagement of pump operating link to secure varied pump stroke. Pump operating link pin should be engaged in outer or end hole, providing maximum pump stroke for winter driving or extreme cold temperatures. Pin should be engaged in inner hole, providing minimum pump stroke for summer driving (hot climates), high altitudes, or high test gasoline. Center hole in lever (as found on Models C6A3, C6A4, E6A3, E6A4) provides an intermediate pump stroke and should be used for normal temperature ranges.

NOTE:—If acceleration is unsatisfactory, check pump setting (above). On Models C6A, C6A2, E6A, E8A remove main metering jet, pump metering jet, check valve, and pump valve assembly and clean with compressed air. On Models C6A3, C6A4, E6A3, E6A4 remove main metering jet and pump jet and clean with compressed air. The pump piston needle and seat assembly (in lower part of pump cylinder) should also be removed and cleaned or replaced.

PERFORMANCE AND ECONOMY:—All jets are 'fixed' type (non-adjustable). Main metering screw is flow-tested and rated in accordance with capacity. It should not be gauged for size with wire drills. Main metering screw can be changed to secure leaner-than-standard fuel mixture to compensate for special fuels or operating conditions such as high altitudes (see specifications). If performance and economy are not satisfactory, examine step-up valve cage assembly, see that ball check is free and seats properly, that valve cage is screwed tight against its seat, that step-up push rod moves freely in upper and lower guides, and that step-up piston is not binding Check float level.

FLOAT LEVEL:—To check float level, take off float bowl cover (upper carburetor body casting), remove gasket, hold lip of float lever firmly against needle valve and measure distance from top edge of float bowl to top of float (not soldered seam). Use special gauge, Part No. 15222, or place a straightedge or metal rule across top of float bowl and measure distance from under side of rule to top of float. This distance should be 1/16″ (C6A, C6A2, E6A, E8A) or 5/64″ (C6A3, C6A4, E6A3, E6A4) plus or minus 1/64″. Float level can be corrected by bending lip of float lever (not the bracket). To lower float level, bend lip of float lever toward needle valve. To raise float level, bend lip of float lever toward float.



CHOKE:—Sisson Automatic Choke is used on De Soto models (E6A, E6A3, E6A4)—see special article on description and adjustment of the Sisson Choke. The other carbruetor models have a semi-automatic choke valve shaft linkage. All models are fitted with a relief poppet valve on the choke valve to prevent over-choking.

PLYMOUTH SPECIAL INSTRUCTIONS:—The manufacturer advises that the Model No. C6A carburetor used on the first Plymouth cars can be brought up to C6A2 specifications (as used on later cars) by changing the following parts. All of these parts must be changed at the same time.

Part	Part No.
Idle Port Restriction Plug	11B-53.
Main Vent Tube and Plug Assembly	145-18S.
Pump Spring	61-78.
Pump Valve Cage Assembly	149-29S.
Pump Piston	160-16.
Pump Rod, Plate, and Rod Assembly	161-16S.

CARTER UPDRAFT CARBURETORS

Car Model	Yr.	Carb. No.	Well Jet Assem. Standard Size	Standard Part No.	1 Size Lean Size	1 Size Lean Part No.	2 Sizes Lean Size	2 Sizes Lean Part No.	Mult. Jet Nozzle Part No.	Low Speed Jet Tube Size	Low Speed Jet Tube Part No.	Pump Jet Assem. Size	Pump Jet Assem. Part No.	Pump Adj. Screw	Metering Rod Top Diam.	Metering Rod Bott. Diam.	Metering Rod Length
CHEVROLET AE	1931	150-S	#56	43-43S	#56½	43-33S	#57	43-29S	12-153	#65	11-91S	#75	48-23S	——	.071″	.064″	4 57/64″
DE SOTO CK	1931	159-S	#55	43-41S	#55½	43-47S	#56	43-43S	12-128	#70	11-99S	#76	48-27S	——	.070″	.060″	5 1/64″
" SA	1931	188-S	#53	43-55S	#53½	43-59S	—	——	12-128	#70	11-99S	#73	48-33S	——	.072″	.057″	5 1/64″
" SA	1931	200-S	#53	43-55S	#53½	43-59S	—	——	12-158	#70	11-118S	#74	48-26S	——	.070″	.055″	5 1/64″
DODGE DH	1931	181-S	#53	43-55S	#53½	43-59S	—	——	12-128	#70	11-99S	#73	48-33S	——	.072″	.057″	5 1/64″
" DH	1931	187-S	#53½	43-59S	#54	43-45S	—	——	12-158	#57	11-118S	#74	48-26S	——	.070″	.055″	5 1/64″
" DH, DL	'31-32	215-S	#53½	43-59S	#54	43-45S	—	——	12-158	#57	11-118S	#74	48-26S	——	.070″	.055″	5 1/64″
NASH 6-60	1931	147-S	#56	43-43S	#57	43-29S	#58	43-35S	12-144	#66	11-90S	#74	48-26S	——	.066″	.051″	4 57/64″
" 9-60	'31-32	147-SA	#56	43-43S	#57	43-29S	#58	43-35S	12-144	#66	11-90S	#74	48-26S	——	.066″	.051″	4 57/64″
PLYMOUTH 30-U	1931	156-S	#56½	43-33S	#57	43-29S	#58	43-35S	12-151	#68	11-102S	#78	48-20	30A-32	.064″	.058″	5 1/64″
" PA	1931	209-S	.0485″	43-61S	#56	43-43S	—	——	12-157	#65	11-120S	#78	48-20	30A-32	.068″	.062″	5 1/64″

NOTE:—Sizes of Jets given as '#53' are wire drill sizes.

CARTER (B & B) UPDRAFT CARBURETORS

Car Model	Yr.	Carb. No.	Main Metering Screw Standard Flow	Standard Part No.	1 Size Lean Part No.	2 Sizes Lean Part No.	Main Nozzle Size	Main Nozzle Part No.	Stepup Jet Power Orifice Size	Stepup Jet Power Orifice Part No.	Idle Orifice Tube Size	Idle Orifice Tube Part No.	Idle Passage Tube	Pump Met. Screw	Pump Valve Assem.
CHRYSLER CI	1932	6A1	222cc.	159-15	—	159-16	—	159-17	#30	12-160	.023″	162-10	.0256″	123-14	123-12	159-11	149-15S
" CI	1932	6B1	222cc.	159-15	—	159-16	—	159-17	#30	12-160	.023″	162-10	.0275″	123-14	123-12	159-11	149-15S
" CI	1932	6B2	222cc.	159-15	—	159-16	—	159-17	#33	12-166	.032″	162-13	.024″	123-16	123-12	——	149-19S
DE SOTO SC	1932	6B	222cc.	159-15	—	159-16	—	159-17	#30	12-160	.023″	162-10	.0256″	123-14	123-12	159-11	149-15S
" SC	1932	6B1	222cc.	159-15	—	159-16	—	159-17	#30	12-160	.023″	162-10	.0275″	123-14	123-12	159-11	149-15S
" SC	1932	6B2	222cc.	159-15	—	159-16	—	159-17	#33	12-166	.032″	162-13	.024″	123-16	123-12	——	149-19S
DODGE DL	1932	6A2	222cc.	159-15	—	159-16	—	159-17	#33	12-166	.032″	162-13	.024″	123-16	123-12	——	149-19S
" DL	1932	6B2	222cc.	159-15	—	159-16	—	159-17	#33	12-166	.032″	162-13	.024″	123-16	123-12	——	149-19S
PLYMOUTH PB	1932	4A2	222cc.	159-15	—	159-16	—	159-17	#30	12-164	.0197″	162-12	.0256-.0275	123-14	123-12	159-11	149-18S
" PB	1932	4A3	222cc.	159-15	—	159-16	—	159-17	#33	12-166	.0256″	162-14	.0236″	123-16	123-12	——	149-23S

Main Metering Screw column 'Flow' indicates capacity in cubic centimeters per minute. Do not gauge these jets with wire drills.

CARTER DOWNDRAFT CARBURETORS

Car Model	Yr.	Carb. No.	Metering Rod: Standard Marking	Metering Rod: Standard Part No.	Metering Rod: 1 Size Lean Marking	Metering Rod: 1 Size Lean Part No.	Metering Rod: 2 Sizes Lean Marking	Metering Rod: 2 Sizes Lean Part No.	Met. Rod Jet Size	Met. Rod Jet Part No.	Main Nozzle Size	Main Nozzle Part No.	Low Spd. Jet Tube Size	Low Spd. Jet Tube Part No.	Pump Jet Size	Pump Jet Part No.
CHEVROLET BA	1932	212-S	56-44	75-49	57-45	75-51	58-46	75-52	#45	120-23S	#40	12-156	#72	11-119S	#72	48-35
" BB	1932	222-S	66-62	75-54	67-63	75-55	68-64	75-56	#45	120-23S	#40	12-156	#72	11-119S	#70	48-36
" BB	1932	222-SA	65-62	75-66	67-63	75-68	68-64	75-69	#45	120-23S	#40	12-162	#72	11-119S	#70	48-36
" BA	1932	235-S	56-44	75-60	57-45	75-61	58-46	75-62	#45	120-23S	#40	12-162	#72	11-119S	#72	48-35
" CB	1933	259-S	62-45	75-67	63-47	75-77	64-48	75-78	.087"	120-41S	#40	12-162	#72	11-119S	#72	48-38
" CC	1933	260-S	62-48	75-84	63-50	75-86	—	—	.087"	120-41S	#40	12-162	#72	11-119S	#72	48-38
ESSEX TERRA 6K	1932	243-S	60-48	75-53	62-48	75-65	62-52	75-71	#50	120-31S	#40	12-169	#71	11-125S	#72	48-35
" " K, KU	1933	267-S	62-45	75-67	—	—	—	—	#43	120-21S	#40	12-162	#72	11-128S	#72	48-35
" " 8 KT	1933	261-S	64-44	75-76	—	—	—	—	.087"	120-41S	#45	12-178	#72	11-128S	#72	48-35
HUPMOBILE K	1933	258-S	67-47	75-75	68-49	75-82	69-50	75-83	#49	120-39S	#45	12-177	#71	11-129S	#72	48-35
NASH 8-70	1931	186-S	65-48	75-37	68-48	75-40	71-48	75-41	#41	120-17S	#30	12-152	#70	11-108S	#70	48-34
PONTIAC 601	1933	255-S	56-44	75-72	58-44	75-81	—	—	#45	120-23S	#40	12-173	#70	11-126S	#74	48-37
" 601	1933	266-S	56-44	75-72	58-44	75-81	—	—	#45	120-23S	#40	12-173	#70	11-126S	#72	48-35
" 601	1933	280-S	64-40	75-98	—	75-99	—	75-100	#42	120-47S	#40	12-162	#70	11-135	#72	48-35

NOTE:—Metering Rod markings indicate size of Rod. A rod marked '56-44' is .056" in diameter (Economy Step) and .044" (Power Step). On three step rods only the first and last steps are indicated by the marking.

CARTER (B & B) DOWNDRAFT CARBURETORS

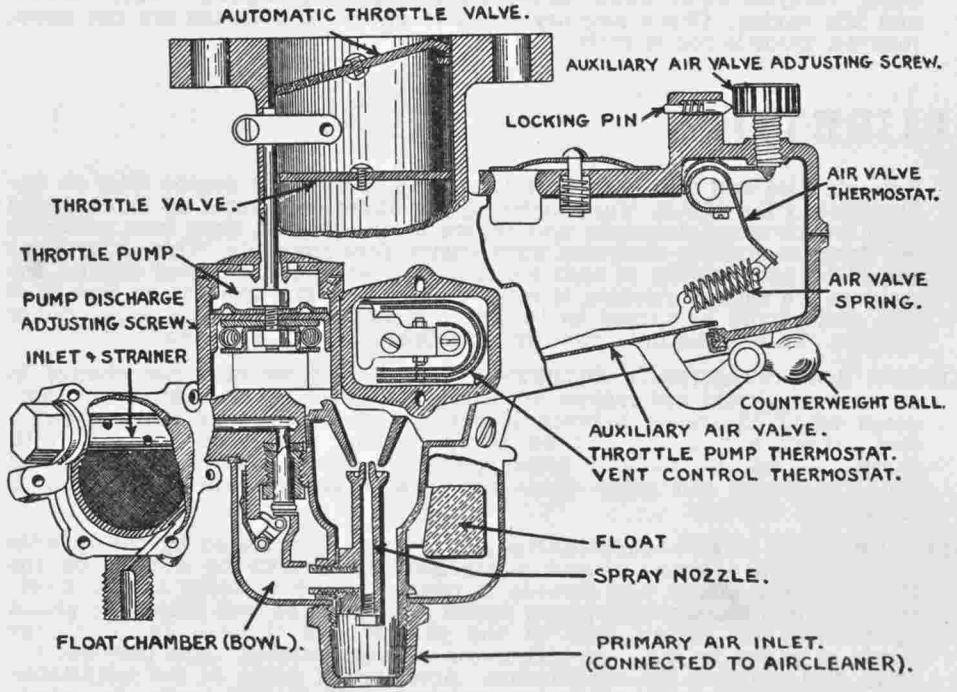
Car Model	Yr.	Carb. No.	Main Metering Screw: Standard Flow	Main Metering Screw: Standard Part No.	Main Metering Screw: 1 Size Lean Less	Main Metering Screw: 1 Size Lean Part No.	Main Metering Screw: 2 Sizes Lean Less	Main Metering Screw: 2 Sizes Lean Part No.	Main Vent Air Bleed Size	Tube Assem. Part No.	Stepup Jet Power Orifice Size	Stepup Jet Power Orifice Part No.	Idle Orifice Tube Size	Idle Orifice Tube Part No.	Pump Valve Cage Assem. Jet Size	Pump Valve Cage Assem. Part No.
DE SOTO SD	1933	E6A	266-270cc.	159-22	5%	159-23	10%	159-19	.0315"	145-14S	.0315"	162-13	.0276"	123-18S	#52	149-29S
" SD	1933	E6A3	266-270cc.	159-22	5%	159-23	10%	159-19	.0315"	145-14S	.0315"	162-13	.0276"	123-18S	.0354"	——
" SD	1933	E6A4	252-256cc.	159-23	5%	159-19	10%	159-20	.0315"	145-14S	.0315"	162-13	.0276"	123-18S	.0354"	——
DODGE DO	1933	E8A	300-304cc.	159-26	—	159-27	—	159-28	.0315"	145-14S	.0335"	162-15	.0276"	123-18S	#52	149-29S
PLYMOUTH PC	1933	C6A	240-244cc.	159-19	—	159-33	—	159-34	.0315"	145-14S	.0256"	162-14	.0276"	123-18S	#52	149-25S
" PC	1933	C6A2	230-234cc.	159-32	5%	159-33	10%	159-34	.0315"	145-18S	.0276"	162-16	.0276"	123-18S	#52	149-29S
" PC, PD	1933	C6A3	230-234cc.	159-32	5%	159-33	10%	159-34	.0315"	145-18S	.0275"	162-16	.0276"	123-18S	.0315"	——
" PC, PD	1933	C6A4	230-234cc.	159-32	5%	159-33	10%	159-34	.0315"	145-18S	.0275"	162-16	.0276"	123-18S	.0315"	——

CADILLAC CARBURETORS

CADILLAC V-8, MODEL 355 (1931).
LA SALLE V-8, MODEL 345 (1931).

TYPE:—Air valve updraft type with positively operated pneumatic accelerating pump (throttle pump). All fuel is metered by spray nozzle located in center of primary air passage. Auxiliary air valve in air horn is controlled by air valve spring and thermostat and is adjustable. This adjustment is the only point on the carburetor requiring attention. Throttle pump is provided with an adjustment (pump discharge by-pass needle valve) which can be opened to cut down pump discharge when necessary. Special adjustment procedure given below should be followed closely.

PRELIMINARY ADJUSTMENT:—Check choke control linkage to see that choke lever on carburetor is against stop when choke control button is pulled all the way out. With carburetor fully choked see that free movement of air valve tip is 1/16-3/32″ at room temperatures (65-80°F.). If this requires adjustment, take out air valve cover screws, lift cover slightly and unhook air valve spring (if air valve spring is stretched or distorted it must be replaced), remove cover, loosen two screws on bracket carrying thermostatic arm, turn shaft slightly and tighten screws, reassemble air valve spring and cover. Run engine until thoroughly warmed up, close throttle and adjust throttle lever stop screw until engine idles at approdimately 300 R.P.M.



AIR VALVE ADJUSTMENT:—With engine warm and idling at approximately 300 R.P.M. turn adjusting screw to right or clockwise until engine speed decreases or engine begins to roll, then turn screw to left or counter-clockwise until speed decreases or engine begins to miss. Correct setting should be midway between these points. Setting can be determined accurately by counting the number of notches on the adjusting screw between extreme rich and extreme lean positions and then turning screw back one-half this number of notches. With air intake elbow removed setting can be checked by pressing lightly up and down on air valve counterweight. If setting is correct, engine speed should decrease slightly in each case. If engine speed increases when counterweight is pressed up, setting is too lean. If engine speed decreases when counterweight is pressed up and increases when counterweight is pressed down, setting is too rich. In making the air valve adjustment the adjusting screw should be turned one or two notches at a time and the engine performance noted.

THROTTLE PUMP:—Throttle pump discharges air in pump chamber into float chamber when throttle is opened, increasing the pressure above the gasoline and causing an increased fuel discharge from the spray nozzle. Throttle pump thermostat opens at 74-78°F., providing a vent for part of the pump discharge and decreasing the float bowl pressure. A second thermostat controlling a float chamber vent is set to open at 125-130°F. (or 115-120°F. when high test gasoline is used). Thermostats should not require adjustment unless tampered with.

Adjustment:—Throttle pump adjusting screw (by-pass needle valve) on side of pump cylinder should be turned down against its seat for normal operating conditions. For hot weather operation or with high test gasoline, adjusting screw can be backed off 2-3 turns. To make this adjustment loosen lock nut and turn adjusting screw counter-clockwise. Adjusting screw must be turned seven full turns to completely open by-pass valve.

AUTOMATIC THROTTLE:—Carburetors are fitted with an automatic (spring loaded) throttle valve above the regular throttle valve. Automatic throttle should not require adjustment and a special tool or testing spring must be used to check setting. With carburetor off the engine and held horizontally with the test tool clipped to the edge of the automatic throttle valve, the weight of the tool should be sufficient to open throttle to within 1/32″ of the stop pin. If it does not and throttle shaft is free, loosen the two screws on the spring housing at the end of the throttle shaft and turn the center adjusting screw clockwise to increase spring tension or counter-clockwise to decrease spring tension. Tighten locking screws and check setting.

FLOAT LEVEL:—Float level should be 7/16-15/32″ above flange on central tube of carburetor body. To check float level with carburetor off engine, remove float bowl, invert carburetor, take off gasket on float bowl seat, measure distance from bottom of float (bottom when not inverted) to top edge of flange on central tube of carburetor body (float bowl seat). This distance should be 7/16-15/32″. Float level can be corrected by bending the hinge bracket slightly.

CHOKE:—Adjust choke linkage so that choke lever on carburetor is against stop when choke button on instrument panel is pulled all the way out.

USED ON—CADILLAC V-8, MODEL 355-B (1932).
CADILLAC V-8, MODEL 355-C (1933).
LA SALLE V-8, MODEL 345-B (1932).
LA SALLE V-8, MODEL 345-C (1933).

TYPE:—Air valve updraft type. Carburetor on these models has been redesigned and an air cleaner added. The main air intake elbow is bolted over the air valve and a smaller elbow leads from the main air intake to the primary intake at the bottom of the bowl. Auxiliary air valve adjustment screw is located on the top of the carburetor body in the same position as on the previous model. This is the only adjustment requiring attention and is adjusted in the same manner as the 1931 model. Choke control should not require adjustment.

CADILLAC V-12, MODEL 370 (1931).
CADILLAC V-16, MODEL 452 (1931).

TYPE:—Twin installation consisting of two carburetors of the same design as used on V-8 model (see previous article). One carburetor is used to supply fuel for each bank of cylinders. Carburetors must be equalized as well as adjusted in order to assure smooth running. Special adjustment procedure is given below. This should be followed closely.

NOTE:—Throttle pump on these carburetors has been changed slightly and throttle pump thermostat is mounted on the pump body under a flat cover. Thermostat is set to operate at 75-80°F. The vent thermostat is not used. Automatic throttle is not used and a flapper valve mounted on the air valve takes its place.

PRELIMINARY ADJUSTMENT:—Check choke control linkage to see that choke lever on carburetor is against stop when choke control button on instrument panel is pulled all the way out. With carburetor fully choked see that free

CADILLAC CARBURETORS

movement of air valve tip is 1/16-3/32" at room temperatures (65-85°F.). Air intake must be removed to check air valve. If air valve requires attention, take out air valve cover screws, lift cover slightly and unhook air valve spring (if spring is stretched or distorted it must be replaced), remove cover, loosen two screws on bracket carrying thermostatic arm, turn shaft slightly, tighten screws, reassemble air valve spring and cover. Run engine until it is thoroughly warmed up, close throttle and allow engine to idle. Idling speed should be 320 R.P.M. This can be checked by taking off oil filler cap on valve cover on one cylinder bank and noting the movement of one rocker arm. Rocker arm should move 40 times in 15 seconds with engine running at 320 R.P.M. Adjust throttle stop screws to secure correct idling speed.

AIR VALVE ADJUSTMENT:—With engine warm and idling at 320 R.P.M. adjust air valve on each carburetor by turning adjusting screw to right or clockwise until engine speed decreases or engine begins to roll, then turn screw to left or counter-clockwise until speed decreases or engine begins to miss. Final setting should be midway between these points. Setting can be determined accurately by counting the number of notches on the adjusting screw between the extreme rich and extreme lean positions and then turning screw back one-half this number of notches.

EQUALIZING ADJUSTMENT:—Use special Cadillac Equalizing Gauge, Part No. 109626. Gauge consists of a 'U' tube partly filled with mercury and with a rubber tube connected to each leg of the tube. These tubes should be connected to the intake manifolds after the vacuum lines on the manifolds have been disconnected. Gauge should be hung on one of the radiator tie rods so that it hangs vertically with the mercury level in the tubes even when the engine is not running. With the gauge in place, disconnect the throttle rod on the right hand carburetor, idle engine at 320 R.P.M. and note mercury level in tubes. If engine speed is exactly 320 R.P.M. (rocker arm will move 40 times in 15 seconds) and mercury levels are even, the carburetor adjustment is correct. If mercury levels are even but engine speed is greater than 320 R.P.M., turn both throttle stop screws out evenly. If mercury levels are not equal and engine idles too fast, back off the throttle stop screw on the carburetor feeding the bank on which the mercury level is lower. If mercury levels are not even and engine speed is too slow, turn up throttle stop screw on carburetor feeding bank on which mercury level is higher. Continue adjustment until mercury levels are even and engine speed is exactly 320 R.P.M.

Check air valve setting by turning adjusting screw clockwise until engine slows down from a too rich mixture, then turn screw counter-clockwise, counting the notches on the adjusting screw until engine slows down from a too lean mixture, then turn screw back exactly one-half this number of notches. Recheck idling speed and mercury level in gauge. Adjust length of right hand throttle rod so that it can be connected without disturbing position of carburetor throttle valve, connect rod. Open throttle and run engine at 1000 R.P.M. Check mercury levels in gauge. If columns are not equal, readjust right hand carburetor throttle rod slightly. Close throttle and idle engine. Check mercury levels in gauge. If columns are not equal, readjust throttle rod slightly.

DETROIT CARBURETORS

MODEL 51—GRAHAM STANDARD SIX, MODEL 53 (1931).
GRAHAM SPECIAL SIX, MODEL 54 (1931).
GRAHAM STANDARD EIGHT, MODEL 49 (1931).
GRAHAM CUSTOM EIGHT, MODEL 42 (1931).
GRAHAM SIX, MODEL 58 (1932).
GRAHAM BLUE STREAK EIGHT, MODEL 57 (1932).
GRAHAM SIX, MODEL 65 (1933).
GRAHAM STANDARD EIGHT, MODEL 64 (1933).
GRAHAM CUSTOM EIGHT, MODEL 57-A (1933).
PACKARD EIGHT, MODEL 8-26, 8-33 (1931).
PACKARD EIGHT, MODEL 8-40, 8-45 (1931).
PACKARD LIGHT EIGHT, MODEL 900 (1932).
PACKARD STANDARD EIGHT, MODEL 901, 902 (1932).
PACKARD DE LUXE EIGHT, MODEL 903, 904 (1932).

TYPE:—Expanding air valve updraft type with auxiliary unit consisting of starting device or priming jet, accelerating pump, and power jet. Main metering unit consists of two hinged air valves or vanes which engage an aspirating tube so that aspirating tube is raised as vanes open. Aspirating tube is attached to a spring loaded metering orifice tube so that orifice is withdrawn from metering pin and fuel supply automatically increased as vanes open to admit more air. Fuel is automatically and correctly proportioned to air for all positions of the throttle valve.

When carburetor is choked for starting, choke lever on carburetor rotates starting sleeve (pump housing) holding the main air vanes closed through a spring operated lever and lining up passages in the upper end of the pump housing and carburetor body so that fuel is drawn up through the hollow stem of the accelerating pump and discharged through a priming port above the throttle valve directly into the mixing chamber. Throttle valve must be kept closed when engine is started (kicker-rod on throttle lever will open throttle correct amount for starting—see adjustment below). Metering pin adjustment and kicker-rod clearance (for starting) are the only points requiring attention.

METERING PIN ADJUSTMENT:—Metering pin should not be adjusted until engine has been thoroughly warmed up. With engine warm and running, close throttle and adjust throttle lever stop screw until engine idles at approximately 5-6 M.P.H. Turn metering pin under carburetor up or clockwise until engine speed decreases and engine begins to miss, then turn metering pin down or counter-clockwise until engine fires smoothly. This adjustment should be made slowly so that metering pin will not be turned beyond the point where smooth running is secured. Metering pin operates on fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. This is the only mixture adjustment on the carburetor.

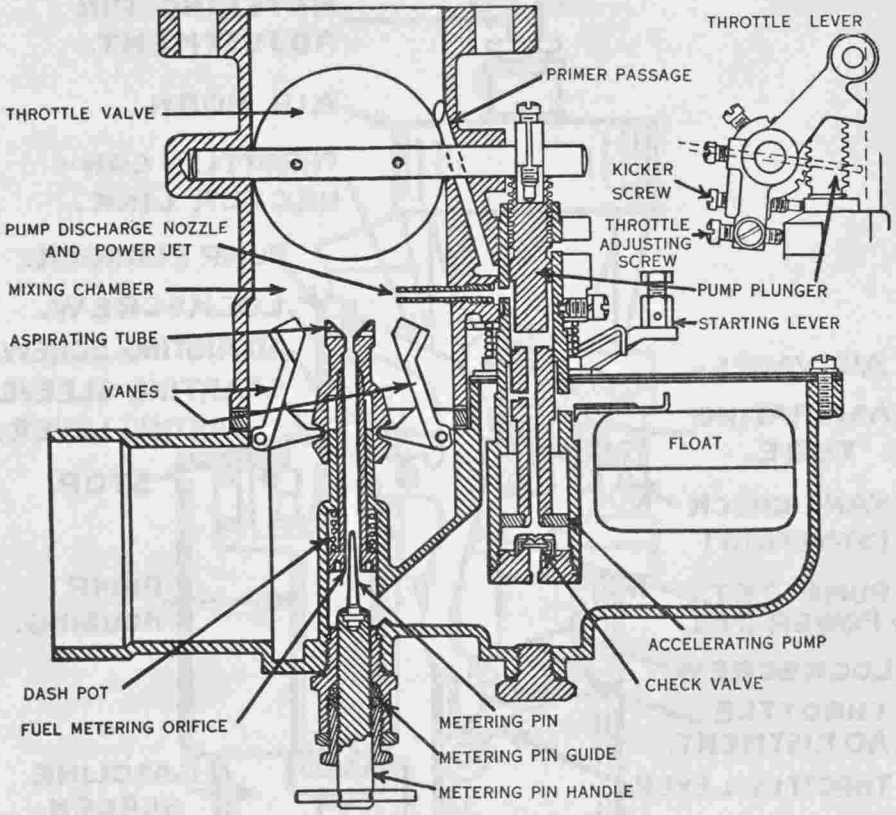
KICKER ROD (STARTING) ADJUSTMENT:—This setting does not change in service and should not require adjustment unless carburetor has been tampered with. Clearance between kicker rod screw (directly above throttle stop screw) and milled flat on pump housing should be .020-.025" with throttle closed and choke in running position (choke control button pushed in). The kicker rod screw opens the throttle slightly when carburetor is choked for starting.

ACCELERATING PUMP:—Accelerating pump piston is operated by the throttle valve through a gear-and-rack engagement or directly by a lever on the throttle shaft. When the throttle is opened the downstroke of the accelerating pump plunger and piston forces fuel from the well below the piston up through the hollow stem of the plunger and through the discharge nozzle or power jet into the carburetor mixing chamber. This provides the extra fuel required for acceleration. Accelerating pump is not adjustable. If acceleration performance is not satisfactory or if 'flat' spots are experienced, check valve assembly at lower end of accelerating pump should be removed and cleaned.

POWER JET:—Power jet is controlled by position of accelerating pump plunger. With throttle less than one-half open, power jet is air vented through holes in the pump housing and carburetor body so that no fuel is discharged through the jet. From half open position up to wide open throttle this upper air vent is closed by the pump plunger and fuel is drawn up from the accelerating well and discharged through the power jet. Fuel flow is controlled by a lower air bleed hole in the pump plunger. All fuel for accelerating pump and power jet is metered by the jet in the check valve assembly. Power jet is not adjustable.

DETROIT CARBURETORS

FLOAT LEVEL:—Fuel level in float chamber is 13/16-15/16" below the top of the float chamber. Carburetor is not sensitive to fuel level and should not require adjustment. If fuel level indicates that float level has been tampered with, this should be corrected by replacing such parts as are necessary to secure correct fuel level.



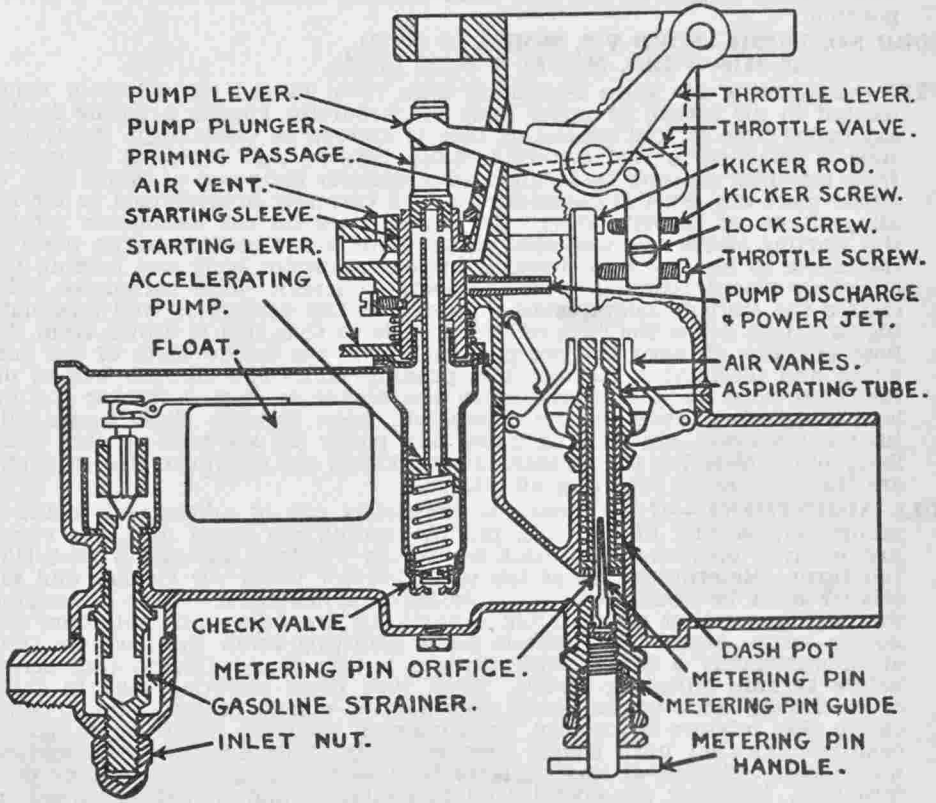
CHOKE CONTROL:—Adjust choke linkage so that starting sleeve is rotated until choke lever on carburetor is against stop screw on float chamber cover when choke control button on instrument panel is pulled all the way out. This is very important in order to line up priming port passages properly for starting. The conventional choke valve is not used.

MODEL 51—CADILLAC V-12, MODEL 370-B (1932).
CADILLAC V-16, MODEL 452-B (1932).
CADILLAC V-12, MODEL 370-C (1933).
CADILLAC V-16, MODEL 452-C (1933).

TYPE:—Twin installation consisting of two Model 51 carburetors (see previous article for complete description and data). One carburetor is used to supply fuel for each bank of cylinders ('V' type engine). Carburetors must be equalized as well as adjusted in order to assure smooth running. Special adjustment procedure is given below. This should be followed closely.

PRELIMINARY ADJUSTMENT:—See that starting sleeve on carburetor is rotated so that choke lever is against stop on float chamber cover when choke control button on instrument panel is pulled out. This is important in order to line up priming port passages in pump housing and carburetor body for starting. If carburetors are completely out of adjustment, turn turn metering pin up until it seats in aspirating tube orifice and then back metering pin off exactly 3½ turns. Run engine until it is thoroughly warmed up, close throttle and allow engine to idle. Idling speed should be 320 R.P.M. This can be checked by taking off oil filler cap on valve cover on one cylinder bank and counting the movement of one of the rocker arms. Rocker arm should move 40 times in 15 seconds with engine running at 320 R.P.M.

METERING PIN (IDLING) ADJUSTMENT:—Metering pin of each carburetor should be adjusted by turning pin up or clockwise until engine begins to miss or speed decreases and then turning pin down or counter-clockwise until engine fires smoothly. This adjustment should be made slowly so that metering pin will not be turned beyond the point where smooth running is secured.



EQUALIZING CARBURETORS:—Use special Cadillac equalizing gauge consisting of a 'U' tube partly filled with mercury which should be hung vertically on one of the radiator brace rods and connected to each intake manifold. A piece of rubber tubing is connected to each leg of the 'U' tube and special fittings can be secured so that the other end of the tubing can be connected to the vacuum fittings on the manifold after the brake booster and windshield wiper lines have been disconnected. Disconnect right hand carburetor throttle rod. With equalizing gauge in place, idle engine and note mercury level in tube. If mercury level is at same height in both legs of the tube, and engine idles at 320 R.P.M. (check rocker arm to see that it operates 40 times in 15 seconds), carburetors are correctly equalized. If mercury level is even and engine idles too fast, back off throttle stop screw in each carburetor an equal amount until correct speed is secured. If mercury levels are not equal and engine idles too fast, back off the throttle stop screw on the carburetor feeding the bank on which the mercury level is lower. If mercury levels are not equal and engine speed is too slow, turn up the throttle stop screw on the carburetor feeding the bank on which

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the mercury level is higher. With correct adjustment engine should idle at exactly 320 R.P.M. and mercury level should be equal in both tubes.

Check metering pin setting on each carburetor by turning pin in or clockwise until engine begins to miss, and out or counter-clockwise until engine begins to roll and then set metering pin exactly midway between these points. Recheck idling speed and mercury level in equalizing gauge. Adjust right hand carburetor throttle rod so that it can be connected without disturbing position of throttle valve, connect throttle rod, open throttle and run engine at 1000 R.P.M. If mercury levels are not even at this speed, readjust right hand throttle rod slightly. Close throttle and check mercury level at idling speed.

KICKER ROD (STARTING) ADJUSTMENT:—Clearance between kicker rod and kicker screw should be .005-.006" with throttle closed and choke in running position.

FORD NO. 18-9510—FORD V-8, MODEL 18 (1932).
40-9510—FORD, MODEL V-8-112 (1933).

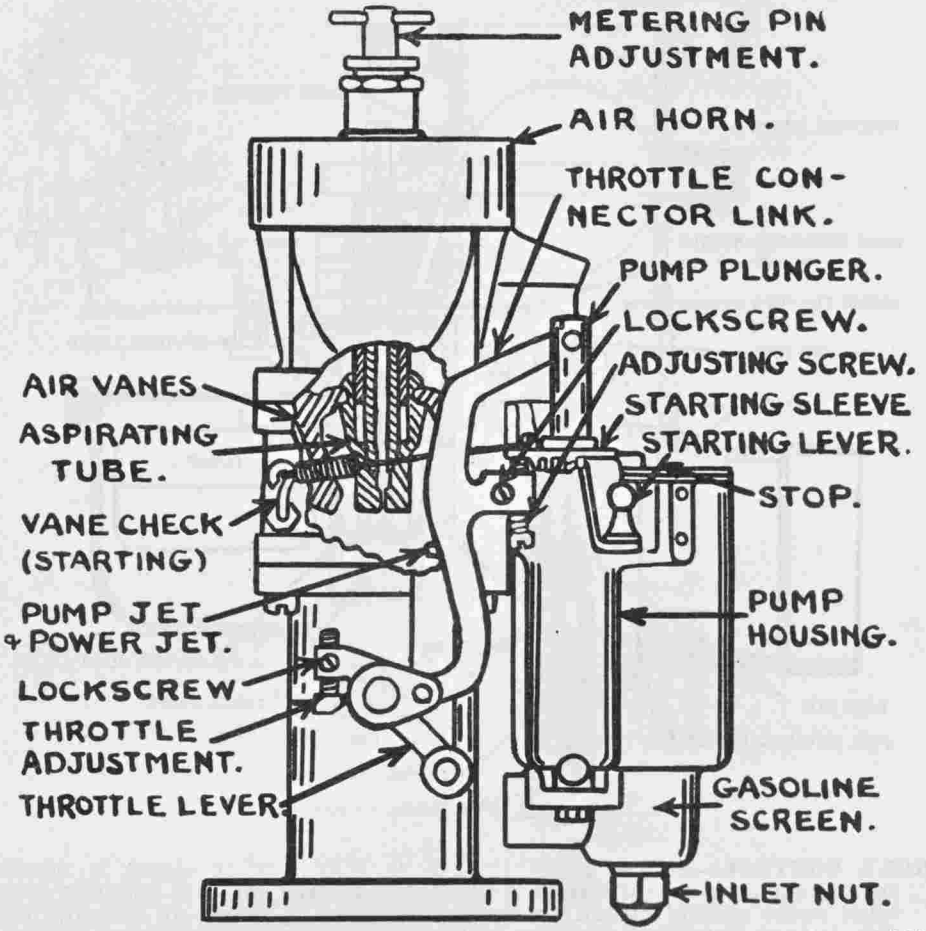
TYPE:—Expanding air valve downdraft type. Two hinged air valves or vanes located in air intake in upper body of carburetor engage a spring loaded aspirating tube so that aspirating tube is lowered as vanes open. Aspirating tube is attached to fuel metering orifice tube so that orifice is withdrawn from metering pin and fuel supply automatically increased as vanes open to admit more air. Fuel is automatically and correctly proportioned to air for all positions of throttle valve. The choke lever on the carburetor rotates the starting sleeve (conventional choke valve is not used), causing ports in the sleeve to line up with passages in the carburetor body and holding the air vanes closed (through a spring-operated lever). With carburetor fully choked the starting sleeve opens a passage in the carburetor wall terminating in a port below the edge of the throttle so that fuel is drawn from the float chamber through the pump cylinder and the hollow stem of the fuel pump and discharged through this priming port. The throttle button on the dash must be kept closed when the engine is started (kicker rod on lever connecting throttle and pump will open throttle slightly—see adjustment below). Accelerating pump and power jet are built in this 'auxiliary unit'. Metering pin adjustment and kicker rod clearance (for starting) are the only points requiring adjustment.

IDLE ADJUSTMENT:—If carburetor is completely out of adjustment, make a preliminary setting of metering pin by turning pin down until air vanes just begin to open and then back off exactly 5 (Model 18) or 3½ (V-8-112) full turns. Metering pin is at top of carburetor under air cleaner and air cleaner must be removed in order to make adjustments. Warm up engine thoroughly, see that all manifold connections are tight and that there are no air leaks. Adjust idle throttle plate adjusting screw until engine runs at approximately 5 M.P.H. with throttle button closed (loosen lock screw before turning adjusting screw). Then turn down metering pin (to right or clockwise) until engine speed decreases or engine begins to miss, indicating that mixture is too lean, then back off metering pin (turn to left or counter-clockwise) until engine fires smoothly. This adjustment should be made slowly allowing at least 30 seconds at each setting to note engine performance. Metering pin operates on fuel mixture and should be turned in for leaner mixture and out for richer mixture.

THROTTLE PLATE STARTING POSITION (KICKER ROD ADJUSTMENT:—This setting does not change in service and should not require adjustment unless carburetor has been tampered with. To check adjustment with carburetor off the engine, insert .020" feeler between throttle valve and carburetor wall on side opposite priming port, loosen lock screw and adjust choke cam adjusting screw so that throttle plate is in correct position to secure this .020" throttle opening with choke lever all the way to the rear and starting sleeve lug against the stop on the float bowl cover.

ACCELERATING PUMP:—When the throttle is opened quickly the down stroke of the accelerating pump plunger and piston forces gasoline from the chamber below the piston up through the hollow stem of the pump plunger and out through the discharge nozzle into the carburetor barrel directly below the lower end of the aspirating tube. This provides the extra fuel needed for quick acceleration. Accelerating pump is not adjustable and does not require attention.

POWER JET:—At speeds above 65 M.P.H. or when the throttle is held open, additional fuel is drawn up through the hollow stem of the accelerating pump plunger and discharged through the power jet. Power jet is controlled by the position of the accelerating pump plunger and is air vented through the upper holes in the plunger at partial throttle so that no fuel is drawn through the jet.



FLOAT LEVEL:—Fuel level in float bowl should be 1 3/16" (plus or minus 1/16") below the top edge of the float bowl. Float level should not require adjustment and if fuel level indicates that float assembly has been tampered with this should be corrected by installing new parts rather than changing settings.

HIGH COMPRESSION ENGINES:—Metering pin specifications have been changed to improve high speed performance on the new Model V-8-112 with higher compression aluminum head. The size of the accelerating pump has also been increased from ⅝ to 11/16" diameter of pump piston. When high compression aluminum heads are installed on the previous Model 18 the accelerating pump need not be changed unless this improved acceleration performance is desired but the metering pin must be changed to the new type, Part No. 18-9525-AR.

Metering Pin Specifications

Carburetor	Standard Metering Pin	High Altitude Metering Pin
18-9510	18-9525-AR	18-9525-BR
40-9510	40-9525	18-9525-AR

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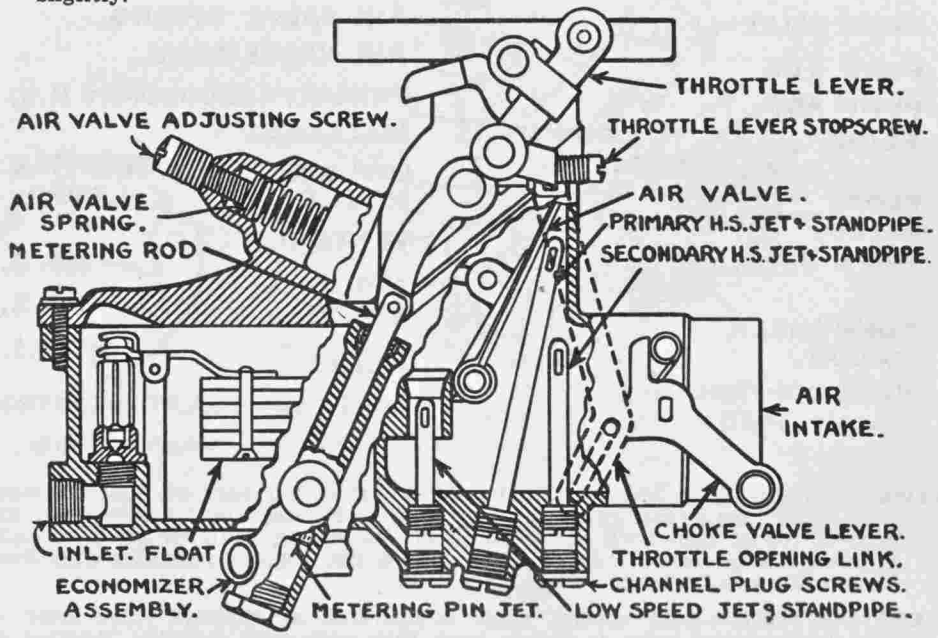
AC-10-1530—CONTINENTAL, BEACON MODEL C-400 (1933).
FRONTENAC, MODEL C-400 (1933).

TYPE:—Automatic air valve updraft type with fixed jets and thottle operated economizer. Low speed jet is located in small venturi in mixing chamber. Primary and secondary jets are located directly under automatic air valve. All jets are of the 'fixed opening' type and are non-adjustable. Automatic air valve is controlled by a dash pot plunger and spring in the housing directly under the air valve adjusting screw. The air valve adjusting screw regulating the air valve spring tension is the only adjustment on the carburetor.

ADJUSTMENT:—Engine should be thoroughly warmed up before adjustment is made. With engine warm and running, adjust throttle stop adjusting screw so that engine runs at approximately 6 M.P.H. (correct idling speed). If engine stops or hesitates and stumbles, turn air valve adjusting screw in slightly. To adjust air valve turn air valve adjusting screw to the left or out slowly until engine begins to miss or hesitate, indicating that mixture is too lean. Then turn adjusting screw to the right or in until engine fires smoothly (turn screw 1/16 turn at a time until correct setting is secured). Check setting by quickly opening throttle about one-half and then allowing it to snap back to closed position. If engine stalls, indicating a too lean mixture, turn air valve adjusting screw to right or in slightly. If engine rolls, indicating a too rich mixture, turn adjusting screw to left or out slightly.



ECONOMIZER:—Economizer consists of a metering jet and metering pin connected to the throttle lever. The fuel supply to the primary and secondary jets is controlled by the economizer at all speeds below 50 M.P.H. to assure maximum economy. At speeds above 50 M.P.H. or with wide open throttle the economizer permits a greater fuel flow for maximum power. Economizer is entirely automatic and requires no attention. No adjustments are provided.

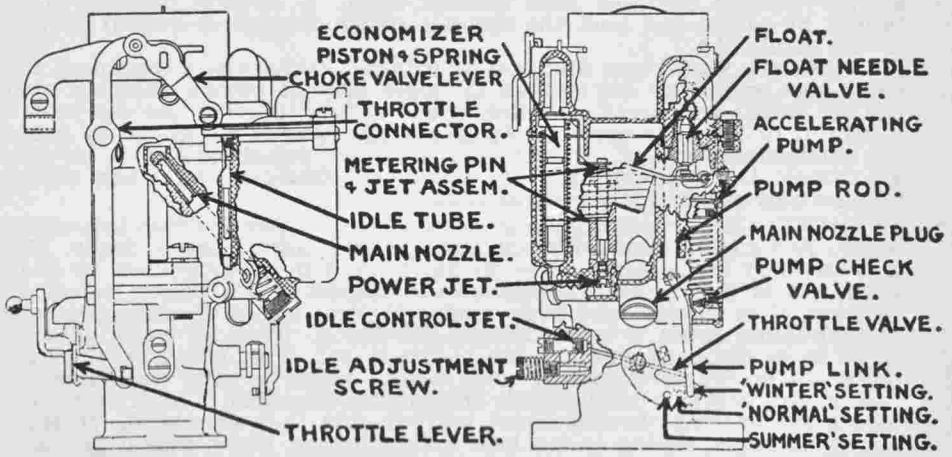
PERFORMANCE:—Carburetor performance throughout entire operating range should be satisfactory if air valve adjustment (above) is correct. Jets should not be changed except for permanent operation at elevations above 3000 feet.

CHOKE:—Choke valve is provided with a relief poppet valve, and is interconnected with the throttle lever so that throttle is opened slightly when carburetor is choked. Choke linkage should be adjusted so that choke valve is fully closed with choke button on instrument panel pulled out and fully open with choke button pushed in.

FLOAT LEVEL:—Float chamber is sealed and is vented through an air tube in the carburetor air horn. This prevents mixture becoming richer if air cleaner is allowed to become clogged. To check float level, take off float chamber cover (upper carburetor body), being careful not to damage air valve mechanism, measure distance from top of float to top edge of float chamber bowl. Correct setting should be 11/32" with float valve held closed by pressing up on float lever. Float valve and float valve seat should be replaced as matched sets and not individually.

B-10-1549—CONTINENTAL FLYER, MODEL C-600 (1933).
10-1545—CONTINENTAL ACE, MODEL 6-85 (1933).
10-1549—FRONTENAC, MODEL C-600 (1933).

TYPE:—Plain tube downdraft type with accelerating pump and vacuum operated economizer. Fuel from float chamber flows through power jet (in lower end of metering jet assembly) and metering jet to main nozzle in carburetor venturi. Main nozzle supplies principal charge at all speeds except idling. Metering pin in metering jet is controlled by economizer piston. The lower end of the economizer piston chamber is connected to the carburetor passage below the throttle and at all positions of partly-opened-throttle the manifold vacuum will hold the piston at the lower end of the stroke (against the tension of the spring) so that the metering pin is held in position in the metering pin jet, limiting the fuel flow. When the throttle is opened the resulting fall in vacuum will allow the spring to force the piston upward, lifting the metering pin and increasing the fuel flow for



acceleration and full-throttle operation. Fuel for idling is taken through a cross passage after passing through the power jet and metering jet up through the idling tube to a second cross passage in which the idle air vent is located. From this point the mixture flows downward to upper idle port (above throttle valve) and past idling adjustment needle valve to lower idling port. Idling mixture adjusting screw and throttle adjusting screw for idling speed are the only adjustments on the carburetor (except for seasonal adjustment of accelerating pump stroke).

IDLING ADJUSTMENT:—Needle valve type operating on gasoline mixture. With engine thoroughly warmed up, set throttle valve adjusting screw so that engine runs at approximately 7 M.P.H. Then adjust idling adjusting screw until engine fires evenly (turn screw in for leaner mixture and out

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for richer mixture). Check idling speed after completing adjustment and readjust if necessary to secure correct idling speed of 7 M.P.H. (car speed in high gear on level road).

ACCELERATING PUMP:—Accelerating pump is connected through a connecting rod to a lever on the throttle valve shaft. Throttle shaft lever has three holes for engagement of connecting rod to provide varied pump stroke. 'Normal' setting with connecting rod engaged in center hole of lever should be used for normal temperature ranges. For extreme warm climates connecting rod should be engaged in inner hole, giving minimum pump stroke. For winter driving or extremely cold temperatures connecting rod should be engaged in outer hole for maximum pump stroke and greatest accelerating charge.

PERFORMANCE:—Carburetor performance throughout entire operating range should be satisfactory if idling adjustment and accelerating pump connection are correct (above). Jets should not be changed except for permanent operation at elevations above 3000 feet.

FLOAT LEVEL:—To check float level, take off float bowl cover, take off gasket, invert bowl cover, measure distance from gasket seat on bowl cover to top of float (bottom of float when not inverted) at point directly opposite needle valve assembly. Correct setting should be 1 27/64".

DN-10-941—NASH TWIN IGNITION EIGHT, SERIES 8-80 (1931).
DO-10-952—OAKLAND EIGHT, MODEL 301 (1931).
10-993—PONTIAC EIGHT, MODEL 302 (1932).

TYPE:—Air valve downdraft type with throttle operated accelerating pump and economizer and Marvel heat control (adjustable throttle control). Carburetor header in which throttle valve is located is divided by a central wall and a vane on the throttle valve so that fuel mixture is divided between the two sections of the intake manifold, each section supplying four cylinders (V or line 8 type engines). Header is jacketed for exhaust gas heating, the amount of exhaust deflected through the header jacket being controlled by the throttle operated heat control valve. A by-pass passage in the header by-passes fuel past the throttle (when throttle is closed) to ports in the manifold.

All jets are 'fixed' type and non-adjustable. Primary and secondary high speed jets or nozzles are located in upper part of mixing chamber above the air valve. Low speed or idling nozzle is located below the air valve in a venturi or fixed air opening. Automatic air valve is controlled by a dash pot plunger and spring assembled in air valve adjusting screw. Air valve adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

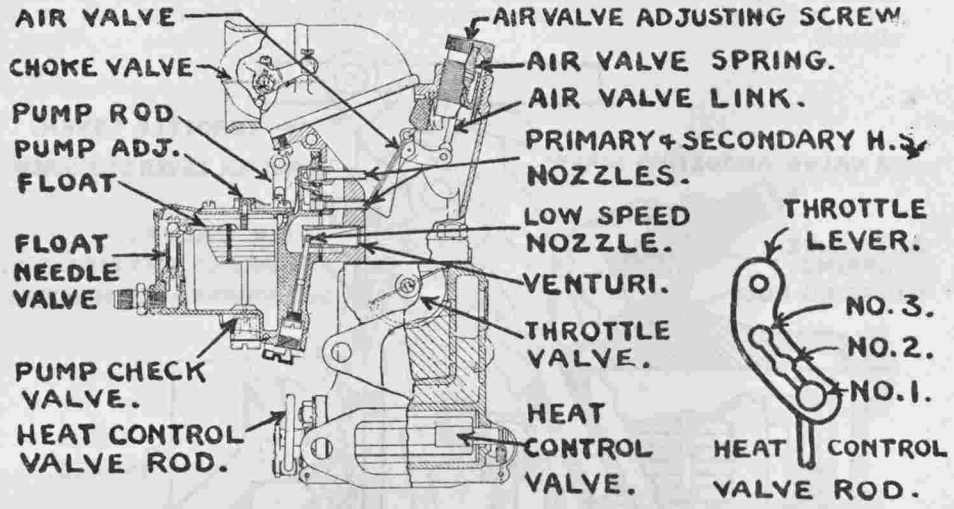
ADJUSTMENT:—Heat control must be placed in No. 1 position (see instructions below) and engine thoroughly warmed up before adjustment is made. Make a preliminary adjustment of the air valve screw by turning screw in or out until end is flush with the end of the ratchet. With engine warm and running, close throttle and allow engine to idle. Adjust throttle stop screw so that idling speed is approximately 5-6 M.P.H. Turn air valve adjusting screw in or clockwise until engine begins to roll (rich mixture), then turn screw out or counter-clockwise until engine begins to miss (lean mixture), finally turn screw in slowly until engine fires smoothly. Check adjustment by quickly opening throttle about halfway and then closing it. If engine misses or stalls, setting is too lean and adjusting screw should be turned in slightly. If engine rolls, setting is too rich and adjusting screw should be turned out slightly. Final setting should be with adjusting screw approximately flush with the end of the ratchet.

ECONOMIZER:—All fuel for primary and secondary discharge nozzles is metered by metering pin jet. For all partial throttle positions (car speeds below 55-60 M.P.H.) the larger diameter section of the metering pin attached to the lower end of the accelerating pump plunger will partially close the metering pin jet and restrict the fuel flow. At high speed or with wide open throttle the metering pin will be pressed down so that a smaller diameter section is in the metering pin jet and the fuel flow will be increased. Economizer is not adjustable and does not require attention.

PERFORMANCE:—Carburetor performance should be satisfactory throughout entire driving range if air valve adjustment (above) is correct and heat control setting is correct. Jets should be changed only to compensate for high altitudes when car is operated permanently at elevations greater than 4000 feet. In this case primary and secondary high speed jets can be changed.

ACCELERATING PUMP:—Accelerating pump plunger shaft and piston disc are forced down when throttle is opened, discharging a portion of the fuel in the pump chamber through the primary and secondary high speed jets. Some of the fuel is allowed to escape through holes in the disc into the upper pump cylinder. This fuel is discharged by the pump plunger which falls freely on the plunger shaft by reason of its weight, thus prolonging the pump discharge. The pump discharge is controlled by the check valve in the channel between the float chamber and the pump. When pump adjustment is in 'summer' position this check valve remains open so that the fuel discharged by the accelerating pump flows back into the float chamber. With pump adjustment in 'winter' position this check valve is closed so that pump discharges through the jets into the mixing chamber.

Adjustment:—Accelerating pump check valve control lever is located on float chamber cover adjacent to pump plunger shaft. Control lever should be turned so that pointer is opposite 'Winter' on cover for winter driving or cold temperature ranges. For summer driving pointer should be turned to 'Summer' position so that practically all the pump discharge is by-passed back to the float chamber.



FLOAT LEVEL:—Float level should be 15/32" below top edge of float chamber with cover and gasket removed. To check level, measure distance from top edge to top of float cork on side adjacent to mixing chamber (diametrically opposite needle valve). Float level should not require resetting and float lever must not be bent.

HEAT CONTROL:—Heat control valve is operated by throttle valve lever so that heat control valve is always open with wide open throttle. Position of heat control valve (amount of heat) at closed throttle and rapidity with which valve opens is controlled by engagement of control valve operating rod on throttle valve lever. Control valve rod should be engaged in end hole on lever (No. 1 position) providing maximum heat for winter driving or cold weather. Center hole on lever (No. 2 position) should be used for moderate temperature ranges. Inner hole on lever (No. 3 position) should be used for extremely hot weather or high test gasoline.

CHOKE:—Choke valve is held in position on its shaft by a spring which will allow choke to open slightly against spring tension when engine begins to fire, preventing over-choking. Choke linkage should be adjusted so that choke valve is closed when choke control button is pulled all the way out and wide open when choke control button is pushed in.

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T-3—10-894 —BUICK, MODEL 8-50 (1931).
TD-1S—10-982 —BUICK, MODEL 32-50 (1932).
TD-2S—10-975 —BUICK, MODEL 8-60 (1931), FIRST CARS.
10-983 —BUICK, MODEL 8-60 (1931), LATE CARS.
10-1501—BUICK, MODEL 32-60 (1932).
TD-3—10-796 —BUICK, MODELS 8-80, 8-90 (1931), FIRST CARS.
10-984 —BUICK, MODELS 8-80, 8-90 (1931), LATE CARS.
10-1503—BUICK, MODELS 32-80, 32-90 (1932).
ED-1S—10-1515—BUICK, MODEL 33-50 (1933).
ED-2S—10-1518—BUICK, MODEL 33-60 (1933).
ED-3—10-1514—BUICK, MODELS 33-80, 33-90 (1933).

TYPE:—Automatic air valve updraft dual type (except T-3 single barrel) with throttle operated economizer and Marvel Heat Control (throttle operated, dash regulated control on 1931-32 models—see description below; automatic thermostat control on 1933 models—see special article on Heat Controls). Dual types have independent mixing chambers, jet assemblies, air valves, and throttle valves (throttle valves are mounted on the same shaft and do not require synchronization). Both air valves are regulated by a single adjusting screw assembly and instructions given below apply to all models.

All jets are 'fixed' type and non-adjustable. Low speed jet is located in venturi at side of air valve and is fed directly from the float chamber (1932 and 1933 models have a deeper well under the jet and jet is provided with a quill which extends down into the well). Primary and secondary high speed jets are located directly under air valve and operate when air valve opens. These jets are fed by fuel metered through economizer metering jet which restricts fuel for partial throttle operation. Air valve is controlled by air valve spring and dashpot built in air valve adjusting screw. Air valve adjustment is only point on carburetor requiring attention.

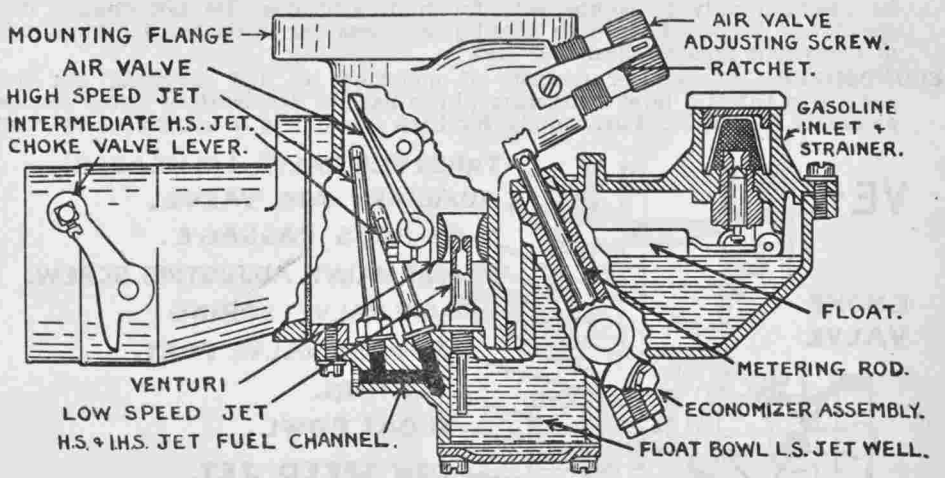
ADJUSTMENT:—Engine must be warmed up before adjustment is made. On 1931-32 cars place heat control button on dash in 'on' position in warming up engine and leave the control in this position while adjustment is being made. This is important. Make a preliminary adjustment of air valve adjusting screw by turning screw in or out until end of screw is flush with end of ratchet, warm up engine, close throttle, retard spark, adjust throttle stop screw if necessary to keep engine from stalling. Turn air valve adjusting screw to left or counter-clockwise until engine hesitates or misses, indicating that mixture is too lean, then turn screw slowly in or clockwise until engine fires smoothly. Check adjustment by opening throttle part way and then snapping it closed. If engine stalls (mixture too lean), turn screw in or clockwise slightly. If engine rolls (mixture too rich), turn screw out or counter-clockwise slightly.

PERFORMANCE:—If air valve adjustment has been correctly made, performance should be satisfactory throughout entire driving range. Jets should be changed only to compensate for high altitudes (permanent operation at elevations greater than 3000 feet). Air valve spring length should be exactly 1½". If air valve spring has been tampered with or if length is not 1½", replace spring.

ECONOMIZER:—Economizer consists of a metering jet and metering pin connected to the throttle lever. Fuel supply for high speed jets is controlled by economizer for all partial throttle positions to assure maximum economy. At high speeds or with wide open throttle economizer permits a greater fuel flow for maximum power. Economizer is entirely automatic, is not adjustable and requires no attention.

FLOAT LEVEL:—Needle valve assembly on T and TD carburetor models is mounted in the bottom of the float bowl casting. Float level on these models should be 19/64" below the top edge of the float bowl casting with the gasket removed. Measure distance from top edge of bowl to top surface of float cork with needle valve held closed. On 1933 Type 'E' carburetors, needle valve assembly is mounted on float bowl cover. To check float level on these models, take off float cover, remove gasket, invert cover and measure distance from gasket seat on cover to top of float (top when not inverted). Correct setting should be 1 3/16". Do not attempt to change float level by bending float lever.

HEAT CONTROL:—Carburetor header on 1931-32 models is jacketed for exhaust gas heating, exhaust gas being carried to and from the header by a double concentric pipe connected to the exhaust manifold. Exhaust gas flow in this piping is controlled by a throttle operated valve through a cam and lever actuated rod. Throttle connection is designed to open valve and decrease heat as throttle valve is opened. The amount of exhaust gas heat applied for closed throttle and partial throttle positions is determined by the position of the cam controlled by the heat button on the instrument board. This is an operating adjustment and should not require attention



except that button must be placed in 'On' position when carburetor is adjusted (see special article for description and adjustment on 1933 automatic thermostat heat control).

CHOKE:—Adjust choke linkage so that choke valve is fully closed with choke control button on instrument panel pulled all the way out and wide open with choke control button pushed in.

VE-3—10-947—ESSEX SUPER SIX (1931).
10-995—ESSEX SUPER SIX (1932), FIRST CARS.
10-1505-ESSEX SUPER SIX (1932), LATE CARS.
10-1533-HUDSON SUPER SIX (1933).

VH-4—10-949—HUDSON EIGHT MODEL (1931)
10-989—HUDSON GREATER EIGHT MODEL (1932).
10-1536-HUDSON GREATER EIGHT MODEL (1933).

TYPE:—Automatic air valve updraft type with throttle operated economizer and accelerating pump (VE-3 only) and Marvel Heat Control (throttle operated adjustable control on 1931 models, automatic thermostat control on 1932-33 models—see description below). All jets are 'fixed' type. Low speed or idling jet is located in venturi at one side of air valve and is fed directly from the float chamber. High speed and intermediate high speed jets are located directly under air valve and operate when air valve opens. These jets are fed by fuel flowing through economizer metering jet, which restricts fuel for partial throttle operation, insuring maximum economy. A by-pass passage in the carburetor and header body controlled by a by-pass valve operated by the choke permits the idling mixture to flow from a point above the idling jet past the throttle into the intake manifold. This provides fast idling speed of 14-15 M.P.H. for warming up with closed throttle (idling by-pass operative only with choke valve closed). Air valve is controlled by dashpot and air valve spring assembled in air valve adjusting screw. Air valve adjustment is the only point requiring attention.

ADJUSTMENT:—On 1931 models heat control adjustment on manifold must be placed in 'warm' position (see instructions below) while adjustment is being made. This is important. Make a preliminary adjustment of air valve adjusting screw by turning screw in or out until end of screw is flush with end of ratchet. Warm up engine. With engine warm and running, close

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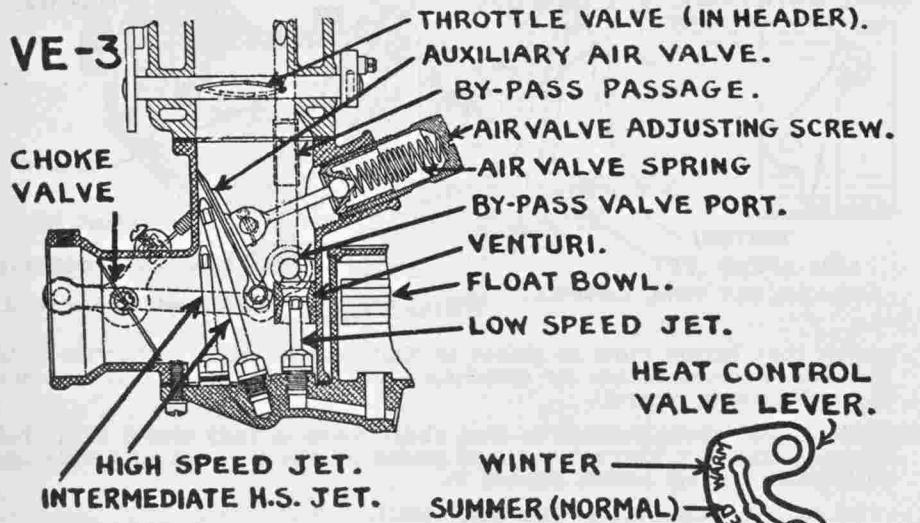
throttle and allow engine to idle. Adjust air valve screw by turning screw in or clockwise until engine rolls (mixture too rich), turn screw out or counter-clockwise until engine begins to miss (mixture too lean), then turn screw in slowly until engine fires smoothly. Adjust throttle lever stop screw to secure correct idling speed of 7 M.P.H.

PERFORMANCE:—If air valve adjustment has been correctly made, performance should be satisfactory throughout engine driving range. Jets should be changed only to compensate for high altitudes. Do not change high speed and intermediate high speed jets unless car is operated permanently at elevations greater than 4000 feet.

ECONOMIZER:—Economizer consists of metering jet and metering pin connected to throttle lever (metering pin is part of accelerating pump plunger assembly on VE-3). Fuel supply for high speed jets is controlled by econ-



omizer at all partial throttle positions to assure maximum economy. At high speeds (60 M.P.H. on VE-3 or 65-70 M.P.H. on VH-4) or with wide open throttle, economizer permits greater fuel flow for maximum power. Economizer is not adjustable and does not require attention.

ACCELERATING PUMP:—Used only on VE-3. Accelerating pump is operated by throttle and discharges additional fuel through high speed jets when throttle is opened for acceleration. Accelerating pump is not adjustable.

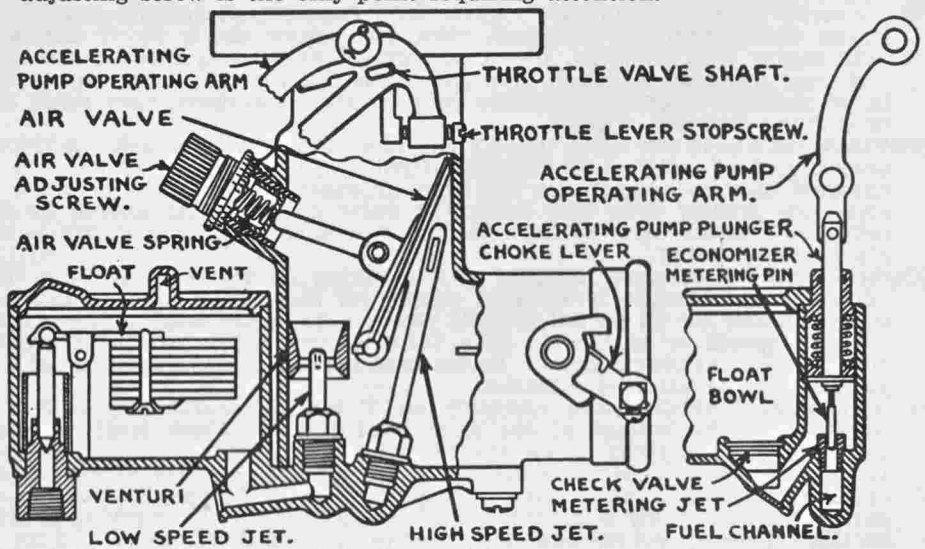
FLOAT LEVEL:—Top of float should be 11/32" (VE-3), 19/64" (VH-4) below top edge of float bowl with needle valve closed. To check float level, take off bowl cover, remove gasket, measure distance from top edge of bowl to top of float while pressing up on float lever between float and lever shaft. Do not attempt to change float level by bending float lever.

HEAT CONTROL:—Carburetor header in which throttle valve is located is jacketed for exhaust gas heating. Amount of exhaust gas deflected through jacket is controlled by throttle operated manifold valve (1931) or automatic thermostat (1932-33). Manifold valve or damper operating lever has three positions for connection of throttle valve connecting lever. Connecting lever stud should be engaged in upper hole marked 'Warm' for extremely cold temperature ranges or winter driving or when carburetor is being adjusted. Engage connecting lever stud in center hole marked 'Med' for ordinary temperature ranges. Lower hole marked 'Cool' should be used only for extremely hot temperatures (in excess of 100°F.) or with high test gasoline. Both the manual and thermostatic heat control systems provide for opening the valve and decreasing the heat when throttle is wide open.

CHOKE:—Choke valve is held in position on choke valve shaft by a spring which allows choke to open against spring tension when engine begins to fire, preventing over-choking and assisting in warming up. Choke valve shaft also operates by-pass idling valve through a connecting lever. Adjust choke linkage so that choke valve is fully closed when choke control button on instrument panel is pulled all the way out and wide open with button pushed in.

10-955—PONTIAC, MODEL 401 (1931).
10-992—PONTIAC, MODEL 402 (1932).

TYPE:—Air valve updraft type with throttle operated accelerating pump and economizer. All jets are 'fixed' type and not adjustable. Low speed jet is located in venturi at one side of the air valve. High speed jet and intermediate high speed jet (1932 only) are located in mixing chamber directly below air valve and operate when air valve opens. Air valve is controlled by a dashpot plunger and spring in the air valve adjusting screw. Air valve adjusting screw is the only point requiring attention.



ADJUSTMENT:—Engine must be thoroughly warmed up before adjustments are made. Make a preliminary adjustment by turning air screw in or out until outer end is flush with end of ratchet. With engine warm and running, close throttle, adjust throttle stop screw so that engine idles at about 10 M.P.H., then turn air screw in or clockwise until engine rolls (mixture too rich), turn screw out or counter-clockwise until engine begins to miss (mix-

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ture too lean), then turn air screw in until engine fires smoothly. Final setting should be midway between the extreme rich and extreme lean positions. Readjust throttle stop screw to secure correct idling speed. Do not idle engine below 5 M.P.H.

ECONOMIZER:—Economizer consists of a metering rod attached to the lower end of the accelerating pump plunger and operated by the throttle. At partial throttle or low speeds (up to approximately 50 M.P.H.) the larger diameter section of the metering pin will partially close the metering pin jet opening so that the fuel flow to the high speed and intermediate high speed jets is restricted, assuring maximum economy. At high speeds or with wide open throttle the metering pin is depressed so that the smaller diameter section of the pin permits a greater fuel flow through the metering pin jet for full power operation. Economizer is not adjustable and should not require attention.

PERFORMANCE:—Carburetor performance throughout entire operating range should be satisfactory if air valve adjustment (above) has been correctly made. Jets should be changed only for permanent operation at altitudes greater than 4000 feet.

ACCELERATING PUMP:—Accelerating pump is operated by throttle lever and discharges additional fuel through high speed jets when throttle is opened. A check valve in the bottom of the float chamber prevents the fuel discharged by the pump flowing back into the float bowl. Accelerating pump is not adjustable.

FLOAT LEVEL:—The top of the float should be 11/32" below the top edge of the float bowl. To check float level, take off bowl cover and gasket, see that float needle valve is seated, measure distance from top of float to top edge of bowl.

CHOKE:—Choke valve is held in position on its shaft by a spring which permits choke valve to open slightly when engine begins to fire, preventing over-choking and assisting in warming up. See that choke linkage is adjusted so that choke valve is closed with choke control button on instrument panel pulled out and wide open with choke control button pushed in.

MARVEL CARBURETORS

			Standard Parts Nos.					High Altitude Parts Nos.					
Car Model	Yr.	Carb. No.	Low Speed Nozzle	Int. High Spd. Nozzle	High Speed Nozzle	Metering Pin Jet	Low Speed Nozzle	Int. High Speed Nozzle	High Speed Nozzle	Metering Pin Jet	Air Spring	M. P. Assem.	Heel Clearance
BUICK 8-50	1931	10-894	47-130-A	49-135-E-22	49-120-C-24	84-088-C	47-120-A	49-120-E-22	49-100-C-24	84-088-C	24-315	173-528	.018-.022"
" 8-60	1931	10-795	47-105-A	49- 80-E-22	49- 90-C-20	84-088-C	47- 95-A	49- 80-E-22	49- 75-C-20	84-088-C	24-315	173-528	.018-.022"
" 8-60	Late '31	10-983	47-100-B	49- 85-E-22	49- 80-C-20	84-090-C	———	———	———	84-090-C	24-315	173-528	.018-.022"
" 8-80, 90	1931	10-796	47-120-A	49-120-E-24	49-120-C-26	84-091-C	47-115-A	49-110-E-24	49- 90-C-20	84-091-C	24-214	173-528	.918-.022"
" 8-80, 90	Late '31	10-984	47-115-B	49-125-E-24	49-115-C-26	84-094-C	———	———	———	84-094-C	24-214	173-528	.018-.022"
" 32-50	1932	10-982	47- 95-B	49- 90-E-22	49- 75-C-18	84-091-C	47- 85-B	49-85- E-22	49- 70-C-20	84-091-C	24-316	173-528	.008-.012"
" 32-60	1932	10-1501	47-100-B	49- 85-E-22	49- 80-C-20	84-091-C	47- 90-B	49- 85-E-22	49- 70-C-20	84-091-C	24-315	173-528	.018-.022"
" 32-80, 90	1932	10-1503	47-115-B	49-120-E-16	49-105-C-26	84-093-C	47-110-B	49-110-E-16	49- 90-C-20	84-093-C	24-214	173-528	.018-.022"
" 33-50	1933	10-1515	47-100-B	49-100-E-24	49- 80-C-18	84-100-C	47-90 -B	49-90- E-22	49-75- C-20	84-100-C	24-316	173-606-B	.008-.012"
" 33-60	1933	10-1518	47-100-B	49- 85-E-22	49- 80-C-20	84-098-C	47- 90-B	49-85- E-22	49-70- C-20	84-098-C	24-315	173-605-B	.018-.022"
" 33-80, 90	1933	10-1514	47-120-B	49-115-E-16	49-105-C-26	84-098-C	47-110-B	49-110-E-16	49- 90-C-20	84-098-C	24-214	173-604-B	.018-.022"
CONT. BEACON	1933	10-1530	49- 85-A-10	49- 90-E-22	49- 70-C-16	84-084-C	49-85- A-10	49-90- E-16	49- 70-C-16	84-084-C	24-415	173-607	.016-.020"
ESSEX S. S.	1931	10-947	49-120-A-10	49-105-E-24	49- 90-C-28	84-102-B	49-120-A-10	49- 85-E-24	49-80- C-28	84-102-B	24-414	173-577	.007-.011"
" S. S.	1932	10-995	49-120-A-10	49-140-E-24	49-100-C-28	84-101-B	49-120-A-10	49-120-E-24	49-85- C-28	84-101-B	24-414	173-577	.007-.011"
"	Late '32	10-1505	49-120-A-10	49-140-E-24	49-100-C-28	84-101-B	———	———	———	84-101-B	24-414	173-577	.007-.011"
HUDSON 8	1931	10-949	47-150-A	49-200-E-24	49-100-C-28	84-088-C	47-150-A	49-170-E-24	49-85- C-28	84-088-C	24-114	173-528	.010-.014"
"	1932	10-989	47-150-A	49-250-E-24	49-100-C-28	84-092-C	47-150-A	49-215-E-24	49-85 -C-28	84-092-C	24-214	173-528	.010-.014"
" S. S.	1933	10-1533	49-120-A-10	49-140-E-24	49-100-C-28	84-101-B	49-120-A-10	49-120-E-24	49-85- C-28	84-101-B	24-414	173-577	.007-.011"
" 8	1933	10-1536	47-150-A	49-250-E-24	49-100-C-28	84-092-C	47-150-A	49-215-E-24	49-85- C-28	84-092-C	24-214	173-589	.010-.014"
NASH 8-90	1931	10-941	47-175-52	49-290-E-28	48-200-54	84-138-B	47-165-52	49-240-E-28	48-160-54	84-136-B	24-214	173-571	.008-.013"
OAKLAND 301	1931	10-952	49-160-A-10	49-280-E-28	49-160-C-28	84-144-B	49-160-A-10	49-240-E-28	49-140-C-28	84-138-B	24-117	173-576	-.008-.013"
PONTIAC 401	1931	10-995	49-115-A-10	———	49-230-C-32	84-100-B	49-115-A-10	———	49-145-C-26	84-100-B	24-415	173-556	.008-.012"
" 402	1932	10-992	49-110-A-10	49-180-E-20	49-120-C-26	84-101-B	49-110-A-10	49-140-E-20	49-105-C-26	84-101-B	24-416	173-583	.010-.014"
" 302	1932	10-993	47-150-56	49-270-E-28	49-230-C-28	84-138-B	47-150-56	49-230-E-28	49-195-C-28	84-138-B	24-214	173-588	.008-.013"

MARVEL TYPE 'B' DOWNDRAFT

Car Model	Yr.	Carb. No.	IdleJet	H. S. Nozzle	Power Jet	Metering Pin and Jet Assem.	Idle Adj. Needle	Idle Air Vent	Pump Disch. Jet	Float Valve and Seat
CONT. FLYER	1933	10-1549	49-587-I	47- 85-C	49-270-F	280-501	43-16	49-H-57	49-47	233-524
" ACE	1933	10-1545	49-578-I	47-110-C	49-290-F	280-502	43-16	49-H-47	49-47	233-524

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S DUPLEX—CORD, MODEL L-29 (1931-32).
DUESENBERG, MODEL J (1931-32-33).
DU PONT, MODEL G (1931-32).
MARMON BIG EIGHT, MODEL 88 (1931).
PEERLESS CUSTOM EIGHT, MODEL C (1931-32).
REO ROYALE EIGHT, MODELS 8-30, 31, 35, 52 (1931-32).
REO ROYALE EIGHT, MODEL N-2 (1933).
STUTZ, MODEL DV-32 (1931-32).

TYPE:—Duplex or dual updraft air valve type with throttle operated accelerating pump. Main nozzle is located in venturi (fixed air intake) and is fed by fuel metered by lift needle valve. Needle valve lift lever is controlled by auxiliary air valve and needle valve is lifted in valve seat as air valve opens, permitting a greater fuel flow to the nozzle. For starting and warming up the dash control shifts the pivot upon which the lift lever rotates so that the needle valve is lifted, resulting in a richer mixture. There is an idle adjustment for each carburetor barrel and these adjustments must be carefully equalized when the carburetor is adjusted. On later models separate 'equalizing' adjustments are provided (see illustration). The range adjustment and power adjustment control both carburetor barrels.

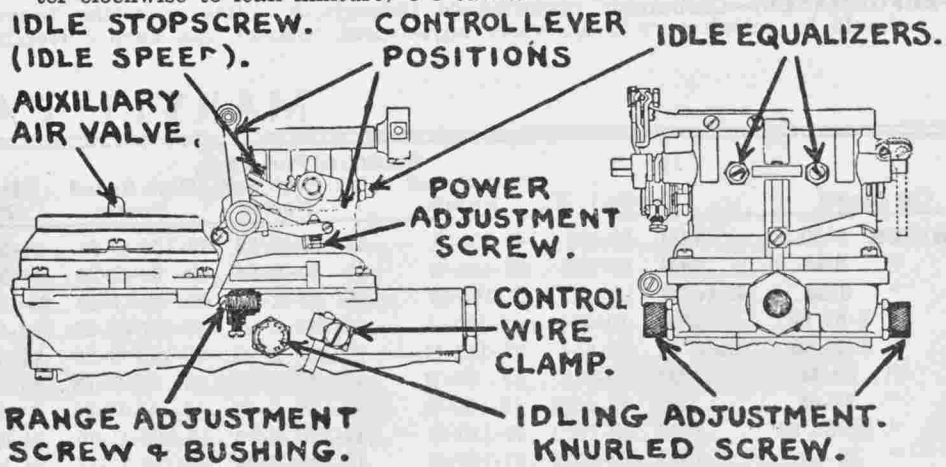
IDLING ADJUSTMENT:—Engine must be thoroughly warmed up before adjustments are made. Each idling adjustment must be made separately. With the engine properly warmed up, disconnect spark plug wires leading to plugs in the four end cylinders (1, 2, 7, 8) and ground these leads to the engine block. Turn up the throttle stop screw (idling speed adjustment) slightly so that engine will not stall and allow engine to idle on the other four cylinders (3, 4, 5, 6). Retard spark, check idling adjustment by depressing air valve 1/32-1/16". If engine stops immediately, setting is too lean. If engine speeds up, setting is too rich. Adjust inner idling adjustment screw (controlling barrel feeding the four middle cylinders) and repeat test. With correct setting, engine should turn over several revolutions when air valve is depressed 1/32-1/16" before beginning to stop. Idling adjustment screw raises and lowers needle valve seat through a gear-and-worm engagement and should be turned clockwise for leaner mixture and counter-clockwise for richer mixture. After completing adjustment, connect spark plug wires on cylinders 1, 2, 7, 8 and disconnect spark plugs in cylinders 3, 4, 5, 6, grounding the cables to the engine block. Repeat the test as given above and adjust outer idling adjustment screw controlling the barrel feeding the end cylinders.

After adjusting each idling adjustment screw, connect all the spark plugs and idle the engine on all eight cylinders. Adjust throttle stop screw for correct idling speed (approximately 5-6 M.P.H.). With the engine idling at the correct speed and firing on all eight cylinders, check idling setting by depressing air valve 1/32-1/16". If setting is too rich, turn both idling adjustment screws in or colckwise slightly. If setting is too lean, turn both screws out or counter-clockwise slightly. Both screws should be turned the same amount (one or two notches) and the test repeated.

Idling Equalizers. On some models with the idling adjustment screws placed on the side of the carburetor barrel, as shown, or on the bottom of the carburetor body, equalizing adjustments are provided (see illustration). On Reo models where this adjustment is provided, the engine should be idled on four cylinders (as above) with throttle closed and spark advanced. After the idling adjustment for the barrel feeding the cylinders which are firing has been made (adjustment screws on bottom of carburetor are limited to less than one turn—do not try to force screws beyond this point), one of the disconnected spark plug wires should be arranged so as to form a small spark gap to the head and the engine speed noted by counting the number of sparks occurring in 30 seconds. The correct number of sparks should be 60 in 30 seconds and if the number counted is not within two of this figure, the lock nut on the equalizing adjustment should be loosened and the equalizing screw turned out or counter-clockwise to increase the number or in or clockwise to decrease the number. When the number of sparks is within two of the correct number (60 in 30 seconds) and the idling adjustment is correct, the second carburetor barrel should be adjusted in the same manner.

RANGE ADJUSTMENT:—This adjustment affects performance in the driving range (20-40 M.P.H.). Carburetor setting in this range is made leaner by turning the range adjustment screw to the left or counter-clockwise and richer by turning the screw to the right or clockwise. The correct factory setting is with the screw turned in so that the head of the screw is flush with the end of the bushing. Whenever the range adjustment is changed it will be necessary to check the idling adjustment.

POWER ADJUSTMENT:—On first models (without reference pin) correct setting of power adjustment screw is secured when the head of the screw is 7/32" from the arm in which the screw is mounted. On later models a reference pin is located at the side of the screw and the screw should be turned in so that the head of the screw is flush with the end of the pin. Power adjustment screw should be turned to the right or clockwise for a richer mixture and to the left or counter-clockwise for a leaner mixture. For high altitudes the power adjustment screw can be turned down (counter-clockwise to lean mixture) 3-5 turns.



ACCELERATING PUMP:—Accelerating pump is operated by the throttle lever and raises fuel in the pump cylinder when the throttle is opened. This fuel is discharged through a cross-passage to a port in the throat of the small venturi. Pump discharge is metered by the size of this cross-passage and the height of the pump overflow which permits excess fuel to flow back into the float bowl. Pump discharge can be changed only by changing the cross-passage and pump cylinder. Pump does not require attention.

DASH CONTROL:—Dash control linkage should be adjusted so that control lever on carburetor is down as far as it will go when the dash control button on the instrument panel is pulled all the way out. When the control lever is up as far as it will go (running position) the dash control button should be slightly out from the instrument panel (1/16-1/8").

T—AUBURN EIGHT, MODELS 8-98, 8-98A (1931).
PEERLESS STANDARD EIGHT, MODEL A (1931).
REO FLYING CLOUD EIGHT, MODELS 8-21, 8-25 (1931-32).

TYPE:—Plain tube updraft type with vacuum operated economizer (metering device) and mechanically operated accelerating pump. Fuel for the main nozzle is metered by metering pin and metering jet (economizer) except for starting and warming up when additional fuel is by-passed by the warming up needle valve controlled by the choke linkage. A small amount of fuel is by-passed to the main nozzle by the 'High Speed' needle valve (see paragraph below). Fuel for idling is taken from the main nozzle well up through the idle tube and is metered by restrictions at each end of the tube. The passage above the idle tube is air bled by an air bleed passage leading from the carburetor mixing chamber below the venturi and this air bleed is controlled by the idling adjustment screw. The idling adjustment is the only point requiring attention.

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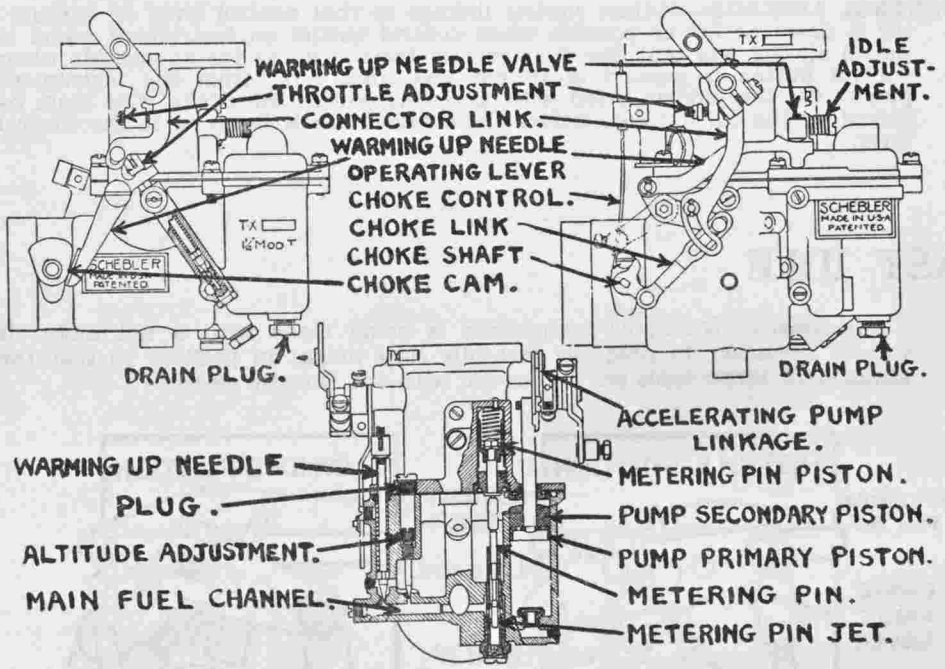
IDLING ADJUSTMENT:—Idling adjustment should be made with engine hot. With engine thoroughly warmed up, close throttle, retard spark, adjust throttle lever stop screw (idling speed adjustment) so that engine will not idle at less than 5 M.P.H. Tighten the locking screw after making this adjustment. For cold weather operation, turn idling adjustment screw in or clockwise until engine begins to roll (mixture too rich), then back screw out slowly until engine fires smoothly. For warm weather operation, turn idling adjustment screw out or counter-clockwise until engine begins to miss (mixture too lean), then turn screw slowly in until engine fires smoothly. Idling screw controls air and should be turned out for leaner mixture and in for richer mixture. After completing idling adjustment, check idling speed and readjust throttle stop screw if necessary. Do not idle engine below 5 M.P.H.

NOTE:—For cold weather operation idling adjustment should be set just under the rolling point and for warm weather operation adjustment should be set just over the missing point. These settings will be secured by making the adjustment as directed above.



ECONOMIZER:—This device consists of a metering pin controlled by a vacuum piston which restricts the fuel flow through the metering jet. For partial throttle positions (when vacuum piston is held up) the larger diameter section of the metering pin restricts the fuel flow, assuring maximum economy. For high speed or wide open throttle operation the vacuum piston is forced down by the piston spring so that the smaller diameter section of the metering pin permits a greater fuel flow to the main nozzle. Economizer is not adjustable and does not require attention. For permanent operation at high altitudes the metering pin may be changed.

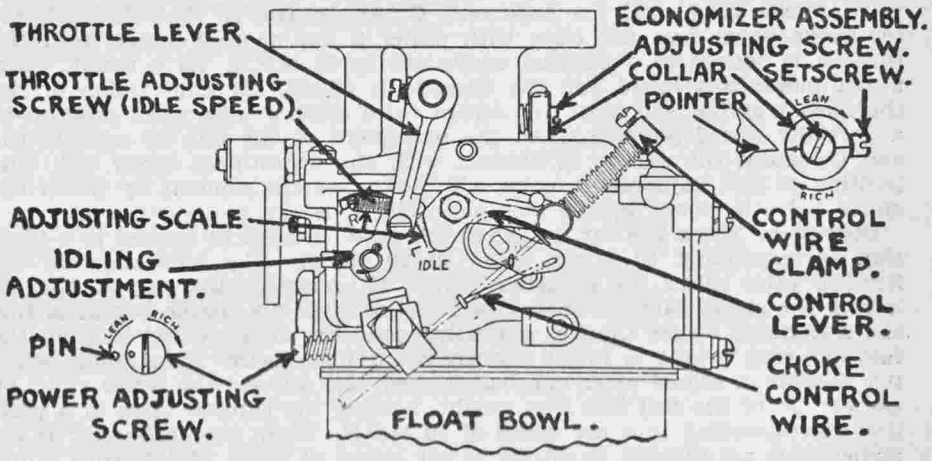
HIGH SPEED:—A needle valve which by-passes a small amount of fuel to the main nozzle is located under a plug in the body casting at the left of the idle adjustment. This adjustment is permanently set at the factory by means of a flow-meter test and should not be changed. The setting (in number of 'clicks' open) is stamped on the carburetor flange directly above the idle adjustment screw. This factory setting should always be followed except for special conditions such as temporary operation at high altitudes, extremely warm climates or high test gasoline.

ACCELERATING PUMP:—Accelerating pump is operated by the throttle lever and discharges fuel to the main nozzle when the throttle is opened. The pump is of the 'delayed action' type and consists of a primary piston or plunger attached to the pump rod which discharges part of the fuel in the pump cylinder and permits the remainder to flow through holes in the plunger into the upper part of the cylinder. This portion of the fuel is discharged by the secondary piston which falls by reason of its weight, thus prolonging the pump discharge. Accelerating pump is not adjustable and should not require attention.

CHOKE CONTROL:—The dash control tubing should be fastened in the dash control clamp on the carburetor body so that the end of the tubing extends about 1/16" through the clamp. The dash control wire should be fastened in the choke lever clamp screw or binding post so that the control button on the instrument panel is about 1/16" out when the lever is against the stop (choke valve wide open).

U—PEERLESS MASTER EIGHT, MODEL B (1931-32).
REO FLYING CLOUD SIX, MODEL 25 (1931).
REO FLYING CLOUD SIX, MODEL 6-21 (1931-32).

TYPE:—Air valve updraft type with throttle operated accelerating pump. Main nozzle is located in venturi (fixed air intake) and is fed with fuel metered by lift lever needle valve controlled by air valve. Needle valve is lifted in valve seat as air valve opens, permitting a greater fuel flow to the nozzle. For starting and warming up, the control lever operated by the dash control holds the air valve closed and raises the needle valve, resulting in a richer mixture. No choke valve is used although some models are fitted with a venturi choke operated by the choke wire linked on the dash control wire (see illustration). Carburetors have an idling adjustment, economy adjustment, and power adjustment.



IDLING ADJUSTMENT:—All adjustments should be made with engine hot (170°F.). With engine thoroughly warmed up, retard spark, close throttle, set idling adjustment so that pointer is in center of scale (midway between 'R' and 'L' marks). Allow engine to idle and note performance. If engine rolls (mixture too rich), move idle adjustment handle up (toward 'L' end of scale) one click at a time until engine fires smoothly. If engine misses or is rough (mixture too lean), move adjustment handle down (toward 'R' end of scale) one click at a time until engine fires smoothly. For cold weather operation idling adjustment should be set just under the rolling point. For hot weather operation idling adjustment should be set just over

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the missing point. After completing idling adjustment, check idling speed and adjust idling stop screw (throttle lever screw) if necessary. Do not idle engine below 5 M.P.H. After setting idling speed recheck idling adjustment. It may be necessary to change idling adjustment if idling speed has been changed considerably.

ECONOMY ADJUSTMENT:—Factory setting of economy adjustment is indicated by arrow mark on adjustment lining up with arrow mark on carburetor body. To set economy adjustment, retard spark, open throttle until engine runs at speed equivalent to 30 M.P.H. Engine must be run at this speed while adjustment is being made. Loosen the lock screw on the economy adjustment, turn the adjusting screw out or counter-clockwise until the engine falters or surges and slows down, then turn the screw slowly in or clockwise until the engine fires evenly and smoothly. The screw must not be turned in farther than is necessary to secure smooth running in order to assure meximum economy. Hold the screw from turning, turn the collar so that the arrow lines up with the arrow on the carburetor body, tighten the lock screw. Making this setting will not affect the idling adjustment.

POWER ADJUSTMENT:—Factory setting of power adjustment is indicated by punch mark on adjusting screw being opposite the pin on the carburetor body with the screw turned so that the head of the screw is flush with the pin. Power adjustment setting will ordinarily only require changing for operation with special fuel or in high altitudes. Adjusting screw should be turned in or clockwise for richer mixture and out or counter-clockwise for leaner mixture. The economy adjustment is affected by changing the power adjustment and must be reset whenever the power adjustment is changed This is important.

In general when the power adjustment is made richer (screw turned clockwise) the economy adjustment should be made leaner (screw turned counter-clockwise) the same amount. Likewise when the power adjustment is made leaner (screw turned counter-clockwise) the economy adjustment should be made richer (screw turned clockwise) the same amount.

ACCELERATING PUMP:—Accelerating pump piston is connected to the throttle valve so that the piston is raised in the pump cylinder when the throttle is opened. The pump raises gasoline into the upper pump cylinder from which it flows through the pump cross passage to a discharge port in the throat of the venturi. Pump delivery is controlled by the cross passage and excess gasoline flows back into the float bowl through the overflow in the wall of the pump cylinder. Pump discharge can be changed only by changing the pump cylinder and cross passage. The pump ordinarily requires no attention.

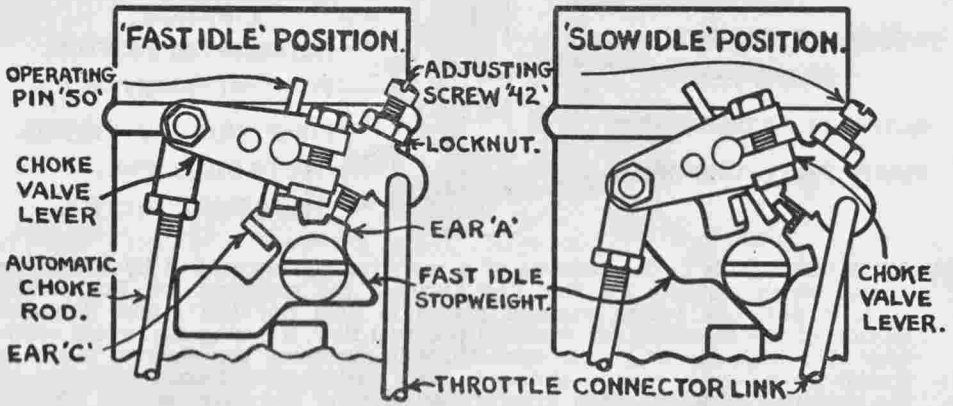
CONTROL LINKAGE:—Adjust control linkage so that control lever on carburetor is down as far as possible when control button on instrument panel is pulled all the way out. See that control lever is up as far as possible when control button is pushed in to not less than 1/16″ from the instrument panel. On the models fitted with a venturi choke the choke wire must be linked on the control wire before the control wire is fastened to the control lever.

STROMBERG FAST IDLE

FAST IDLING DEVICE:—The 'Fast Idling' Device used in conjunction with the Automatic Choke consists of a series of levers connected to the throttle valve, choke valve, and the Automatic Choke Control so that the carburetor choke valve does not close with either a hot or cold motor until the throttle is opened to a position equivalent to 20 M.P.H. As a result, when a hot motor is stopped and the throttle is closed, the contraction of the thermostat spring will close the choke valve from a wide open position to a partially closed position when the movement of the pin '50' against the ear 'C' causes the ear 'A' to contact with the adjustment screw '42'. The position of this adjustment screw will determine the amount by which the choke valve is closed by the automatic choke as the motor cools off.

Operation. When the car is started the throttle must be opened to a position corresponding to a car speed of 20 M.P.H. The movement of the throttle valve raises the adjusting screw '42', releasing the ear 'A' and allowing the choke valve to snap closed. As soon as the engine begins to fire, the Automatic Choke Control partially opens the choke valve, causing the fast idle stop weight to rotate slightly counter-clockwise. As a result, when the throttle is closed after car has started, the adjustment screw rides on the ear 'A' of the fast idle stop weight, holding the throttle open in a position corresponding to a car speed of 20 M.P.H. When the carburetor is installed this adjustment is set for a car speed of 15-20 M.P.H. with a hot motor, or approximately 12 M.P.H. with a cold motor. As the motor warms up, the fast idle stop weight is rotated slightly clockwise so that the adjustment screw slides off of ear 'A', allowing the throttle to assume a closed position.

Adjustment. Whenever adjustment is being made with a hot motor it will be necessary to hold the fast idle stop weight in position so that the adjustment screw rides on the ear 'A' with the throttle closed.



Loading. If the engine becomes loaded when cranking, this condition can be corrected by holding the throttle in wide open position, which will open the choke valve approximately 40%.

STROMBERG AUTOMATIC CHOKE

MODEL B (1932), MODEL C (1933).

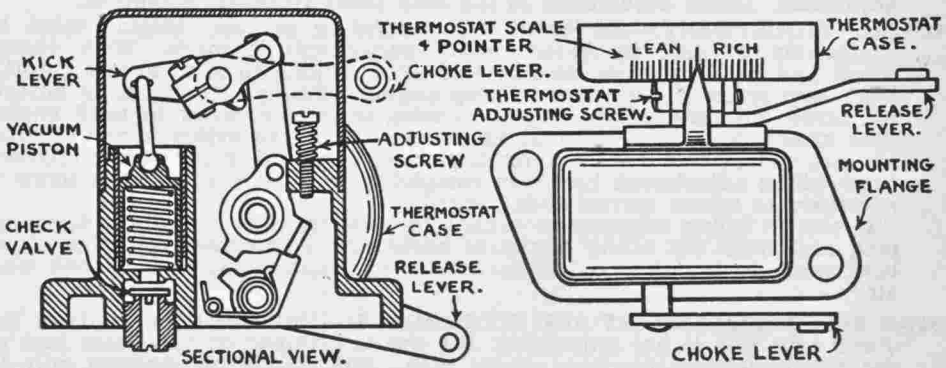
DESCRIPTION:—The Stromberg Automatic Choke Control is a device designed to automatically choke the carburetor when the engine is started cold and to automatically control the choke valve during the warming up period of the engine. It is designed to be mounted on the manifold and is operated by the engine heat and manifold vacuum. The choke is connected to the carburetor choke valve lever by means of a suitable connecting rod.

OPERATION:—The coiled thermostat spring in the thermostat case on the side of the unit will close the carburetor choke valve at an engine temperature of 70°. The choke will thus be in position for starting and is held closed during the cranking operation by the locking of the roller 'M' against the cam 'L'. When the engine begins to fire, the vacuum in the manifold will act to pull down the piston 'G' (since the lower end of the piston cylinder is connected to the manifold), unlocking the roller 'M' and cam 'L'. As soon as the engine begins to fire regularly the piston will be drawn down to the end of the stroke so that cam 'L' bears against lever 'H', opening the choke valve by a pre-determined amount against the tension of the thermostatic spring. The distance between the cam and lever is adjustable by means of the lever adjusting screw 'K'. As the engine warms up, the thermostatic spring opens the choke valve until the choke valve is wide open when the temperature of the water reaches 120°.

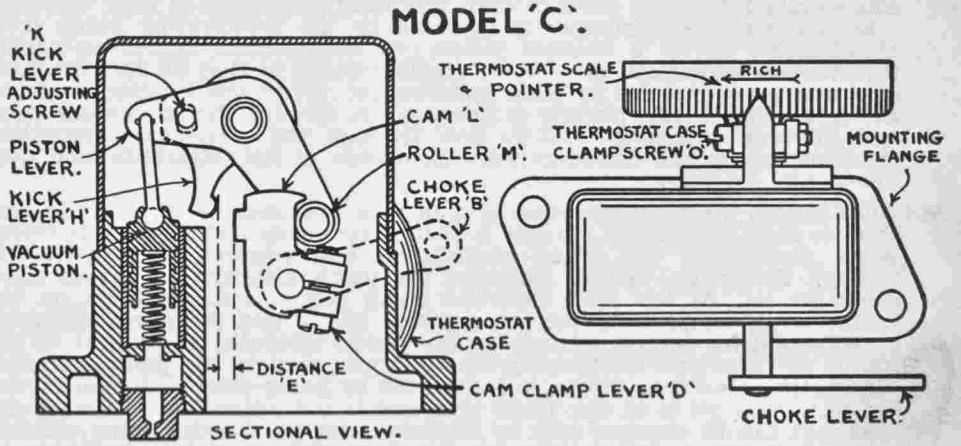
ADJUSTMENT:—(1932). Choke can be removed from engine by disconnecting control levers and taking out two mounting screws. Choke thermostat must be at normal room temperature of 70°F. before any adjustments are made. If engine has been running, remove choke and allow to cool off. If choke case temperature is under 70°, take choke into warm room and allow to come up to room temperature. The release lever must be held in a horizontal position (parallel to base) while the choke is being tested or adjusted. To check choke, unhook thermostat spring from prong in case, set the case at correct figure for car (5 notches lean for Oldsmobile F-32, 8 notches lean for Oldsmobile L-32, 16 notches lean for Packard 905, 6), raise choke lever to highest position and check distance from thermostat spring hook to prong on case. Correct figure should be .002-.020". Distance can be set by loosening set screw and turning the shaft. Tighten the set screw and see that thermostat does not bind on case. Invert choke, lift choke lever and allow it to drop. It should drop freely and the linkage should come back to the 'lock' position. Assemble thermostat spring hook on prong, set thermostat case at '0'. With this setting, choke lever should catch in the closed position but should yield to a light pressure. Revolve thermostat case one quarter turn so that prong is under pointer. With this setting, choke lever should resist slight pressure but should yield to a tap by hand. There should be a noticeable difference between the two settings. The amount of resistance offered by the choke lever is controlled by the adjusting screw in the choke case. Turn this screw down or clockwise to decrease resistance and up or counter-clockwise to increase resistance. Set the thermostat case for the correct figure, securely tighten the thermostat case clamp screw, assemble choke on engine, see that backlash between choke control and carburetor choke levers is not more than .006". This can be adjusted by changing position of carburetor choke lever on choke valve shaft. Release lever should be connected to accelerator rod. This release lever opens the choke valve when the accelerator is opened wide.

ADJUSTMENT (1933):—When the Automatic Choke requires adjustment, it should be removed from the engine by disconnecting the carburetor connecting rod and taking out the two mounting screws. The Choke should then be allowed to cool off to 70° before any attempt is made at adjusting (this is particularly important if engine has been running and Choke is heated). However if temperature is under 70° choke should be taken into a room heated to 70° (this is normal room temperature) and allowed to come up to room temperature before adjustment is made. To adjust, first take off Choke case cover and see that all working parts operate freely. With roller 'M' in locked position against first notch of cam 'L' the distance between the center of the hole in the choke lever 'B' and the lower surface of the Choke base plate should be 1 5/16" (Studebaker models), 1 15/32" (Packard models), or 1 19/32" (Oldsmobile models). If this distance is not correct, loosen cam clamp lever 'D' and shift position of control lever until correct setting is secured. The distance 'E' between the face of the cam 'L' and the surface of the kick lever 'H' is set at the factory by means of a #17 drill (Studebaker Models 56, 73, 82, 92, Packard Models 1001, 2, 3, 4) or #20 drill (Oldsmobile models) and can be adjusted by loosening kick lever adjusting screw 'K'. Then unhook thermostat spring end 'A' from prong 'N' in thermostat case, loosen clamp screw 'O' and rotate thermostat case 'Q' until the zero mark of the scale on the rim of the case is directly under

MODEL 'B'.



MODEL 'C'.



the pointer. In this position the hook of the thermostat should be flush with the prong in the case. Place the hook on the prong, revolve the thermostat case the correct number of divisions toward the 'rich' or 'lean' side of the scale (see specific setting given for each car model), securely tighten clamp screw 'O'. See that piston operates freely and does not stick in any position, assemble Choke case cover, mount choke on manifold, making certain that gasket is in good condition and that mounting screws are pulled down evenly and securely. Then connect control rod to carburetor choke lever and see that there is only .006 inch backlash between levers. If it is necessary to adjust control rod to secure correct backlash, loosen the clamp screw on the carburetor choke lever and shift the carburetor choke lever on its shaft. See that the carburetor air cleaner does not interfere with the free movement of the control rod.

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U-2—DURANT, MODELS 6-12, 6-14 (1931).
HUPMOBILE SIX, MODEL S (1931).
STUDEBAKER SIX, MODEL 54 (1931).
UX-2—MARMON, MODEL 70 (1931).
U-3—FRANKLIN, SERIES 15 (1931).
FRANKLIN, SERIES 16 (1932).

TYPE:—Plain tube updraft type with positively operated accelerating pump and economizer (Studebaker) or independent vacuum economizer. Some models are equipped with auxiliary control needle valve operated by choke lever for starting. Main discharge jet is air bled to control mixture so that fuel flow through jet is restricted at partial throttle (high vacuum) and increased at open throttle (low vacuum). All fuel for main discharge jet is metered by main metering jet under float bowl (except for high speed or open throttle when fuel is by-passed through economizer valve). Accelerating pump discharge is metered by pump jet (below pump) and is not adjustable. Idling adjustment is the only point requiring attention.

IDLING ADJUSTMENT:—Air bleed type operating on air. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle (adjust throttle lever stop screw if necessary to keep engine running). Turn idling adjusting screw out until engine begins to miss, then turn screw in until engine fires smoothly and speed is at maximum. Idling adjusting screw controls air and should be turned out for leaner mixture and in for richer mixture. After idling adjustment has been completed readjust throttle stop screw if necessary to secure correct idling speed.

If correct idling adjustment cannot be secured, take out idling discharge plug and clean out idling discharge ports with compressed air. The idling tube can also be taken out if carburetor is disassembled and cleaned with air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jet is of the 'fixed' type and is not adjustable. Jet size is stamped on the outer face of the jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuels or such operating conditions as high altitudes.

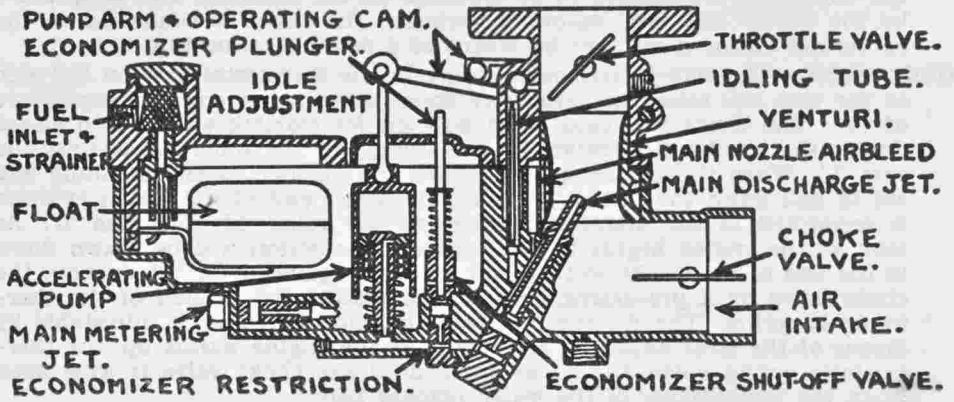
Economizer needle plunger is operated by the accelerating pump lever (Studebaker) or by a vacuum piston. At intermediate speeds or partial throttle positions, economizer valve remains closed so that all fuel for main discharge jet is metered by main metering jet. When the throttle is opened the economizer needle plunger is forced down, opening the economizer valve and allowing additional fuel to flow through the economizer restriction (by-pass jet) to the discharge jet. Economizer is not adjustable and does not require attention.

ACCELERATING PUMP:—Accelerating pump is operated by a lever on the throttle shaft. When the throttle is opened the pump piston sleeve is forced down, discharging the initial quantity of fuel required for acceleration through the central hollow stud and the pump metering jet to the main discharge jet. At the same time the pump piston is forced down on the central stud, compressing the pump piston spring and the pump discharge is prolonged for several seconds by the piston returning to its seat at the top of the stud and discharging the remaining fuel in the pump chamber.

Adjustment:—Pump discharge is metered by pump reducer (pump metering jet). This jet is of the 'fixed' type and is not adjustable so that pump discharge can be changed only by replacing this jet. To determine whether pump discharge is satisfactory for the particular operating conditions of the engine, run engine until it is well warmed up, close throttle and allow engine to idle. Open throttle quickly and note engine performance. If engine hesitates or misses, pump discharge may be too small. If engine stumbles in picking up speed, pump discharge may be too large. A more satisfactory check may be made by running car at about 5 M.P.H. in high gear on a level road and noting performance when quickly accelerated.

FLOAT LEVEL:—Fuel level in float chamber is set at exactly 9/16" below top edge of float chamber (without gasket) when engine is not running. Float level can be changed to correct fuel level by bending float lever at the corner between the float and the needle valve. To check float level measure distance from gasket seat on float chamber cover (with gasket removed) to top of float at the center. This distance should be exactly 3/64".

CHOKE:—On some models a cam on the choke valve shaft is used to raise an auxiliary needle valve when choke valve is closed so that fuel flows through this valve and is discharged through a starting jet in the mixing chamber for starting. The auxiliary needle valve control linkage will ordinarily not require adjustment but should be checked to see that there is sufficient



clearance between the cam and lever so that auxiliary needle valve is closed when choke valve is open. Check choke linkage and adjust so that choke valve is fully closed when choke control button on dash is pulled all the way out and wide open with choke control button pushed all the way in.

UU-2—HUPMOBILE CENTURY 8, MODEL L (1931).
HUPMOBILE MODEL C (1931).
STUDEBAKER DICTATOR, MODEL 61 (1931).
STUDEBAKER COMMANDER, MODEL 70 (1931).

TYPE:—Twin updraft plain tube type with positively operated accelerating pump and economizer (connected to throttle lever) and auxiliary control needle valve connected to choke lever for starting. There are two carmuretor barrels with independent main discharge jets, main metering jets, throttle valves, and idling adjustments. Throttle valves operate on the same shaft and will not require synchronization. All fuel for main discharge jets is metered by main metering jets under float bowl (except for high speed or wide open throttle operation). Metering jets are 'fixed' type. Idling adjstments and accelerating pump adjustment (needle valve type) are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type operating on fuel mixture. There are two idling ports in each barrel. The upper idling port (controlled by idling adjusting screw) is above the throttle and supplies the fuel for idling with closed throttle. The lower idling port (non-adjustable) operates in conjunction with the upper port at low car speeds of approximately 10-18 M.P.H.

Adjustment:—Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle (adjust throttle lever stop screw if necessary to keep engine running). Turn inner idling screw (toward engine) down until it seats, cutting off fuel supply for four cylinders and allowing engine to idle on remaining four cylinders. Adjust idling screw of the other carburetor barrel until engine fires smoothly. Then turn inner adjusting screw out until engine fires smoothly on all eight cylinders.

Idling adjustment can be made without cutting out four cylinders by adjusting each idling screw individually by turning idling screw in until engine begins to miss or is rough and then turning the screw out until engine fires smoothly. This point can also be determined by turning screw in until engine begins to miss and out until engine begins to roll and finally

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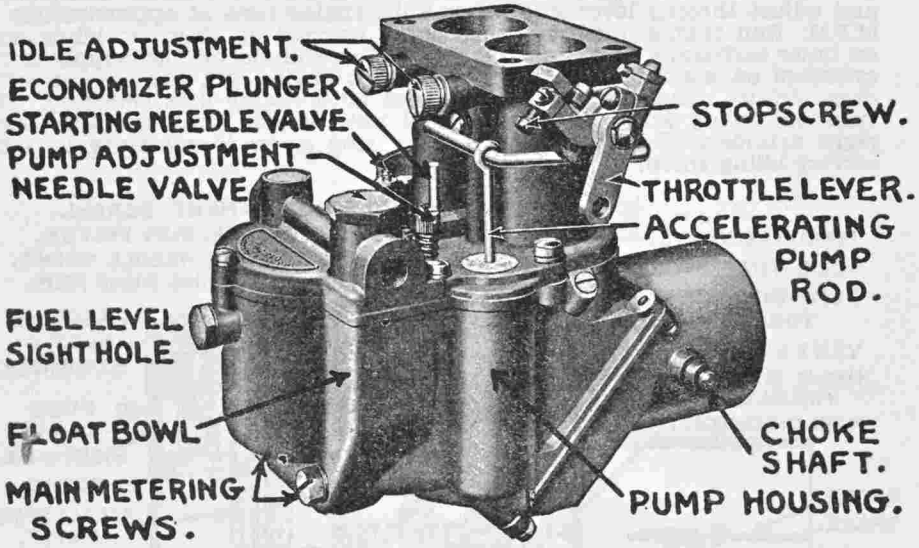
setting the screw midway between these points. Idling screws operate on fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Throttle lever stop screw should be readjusted after idling adjustment has been completed to secure correct idling speed if necessary.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets are of the 'fixed' type and not adjustable. Metering jet size is stamped on the outer face of the jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuels or operating conditions, such as high altitudes.

Economizer is operated by accelerating pump lever. At all positions of partial throttle economizer needle valve will be closed so that all fuel for main discharge jets will be supplied by main metering jets. When the throttle is opened the pump lever depresses the economizer needle plunger, opening the economizer valve and allowing additional fuel to flow through the economizer by-pass jet to the main discharge jets. Economizer is not adjustable and does not require attention.



ACCELERATING PUMP:—Accelerating pump is operated by throttle lever and supplies an extra charge of fuel to the main discharge jet when the throttle is opened. Accelerating pump discharge is regulated by a needle valve in the pump discharge channel. Needle valve adjusting screw is located on float chamber cover adjacent to pump.

Adjustment:—Average setting for accelerating pump adjusting screw is ½ turn open (summer) to 3 turns open (winter). To check pump setting, run engine until well warmed up, close throttle and retard spark. Accelerate engine by opening throttle quickly and note engine performance. If engine hesitates, pump setting is too small and adjusting screw should be turned out slightly. If engine stumbles in picking up speed, pump setting is too large and adjusting screw should be turned down (or in) slightly. Check setting by operating car in high gear on a level road at approximately 5 M.P.H. and open throttle suddenly. Ir car hesitates, setting is too small. If car stumbles, setting is too large. This will be particularly noticeable as engine warms up.

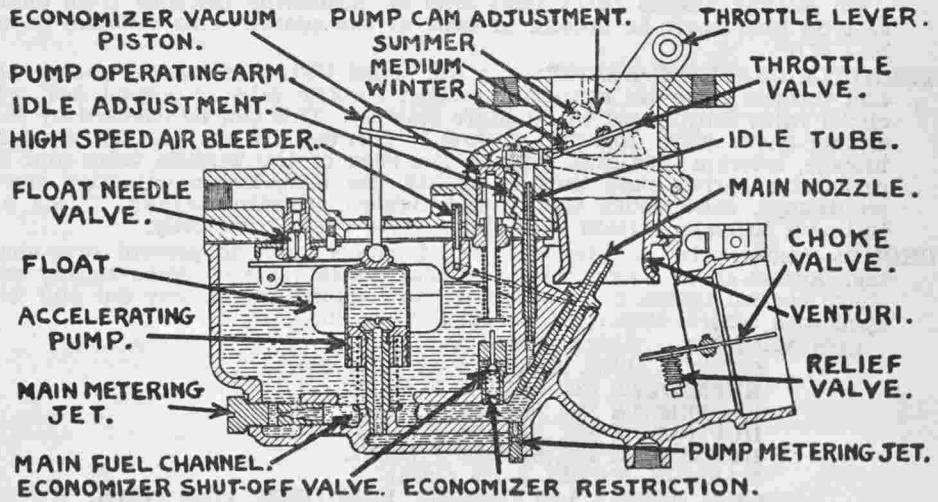
FLOAT LEVEL:—Fuel level in float chamber should be even with the bottom of the sight hole in the float chamber casting with the engine not running. To check fuel level, remove plug in sight hole directly above metering jets on end of carburetor body. Float level can be changed if necessary to correct fuel level by bending the float lever at the corner between the float and the needle valve.

CHOKE:—Choke valve linkage should be adjusted so that choke valve is closed tight when choke control button on instrument panel is pulled all the way out and wide open with choke control button pushed in. The choke valve is connected to an auxiliary control valve for starting. This linkage should be checked to see that clearance between choke lever cam and operating lever is sufficient so that needle valve is seated when choke valve is open. It will ordinarily not require adjustment.

UR-2—CHRYSLER SIX, MODEL CM (1931).
ROCKNE, MODEL 65 (1932).
ROCKNE, MODEL 75 (1932).
ROCKNE, MODEL 10-31 (1933).
STUDEBAKER SIX, MODEL 55 (1932).

URO-2—AUBURN EIGHT, MODEL 8-100 (1932).
AUBURN EIGHT, MODEL 8-101 (1933).
FRANKLIN, SERIES 16-B (1933).
FRANKLIN OLYMPIC, SERIES 18 (1933).

TYPE:—Plain tube updraft type with positively operated accelerating pump and vacuum economizer. Auburn Model is fitted with a 'throttle-cracking' device connected to the choke valve lever for starting (see data below). Main discharge jet is air bled to control mixture so that fuel flow through jet is restricted at partial throttle (high vacuum) and increased at open throttle (low vacuum). All fuel for main discharge jet is metered by main metering jet under float bowl (except for high speed or open throttle when additional fuel is by-passed through economizer by-pass jet). Idle adjustment and accelerating pump adjustment (summer-normal-winter setting) are the only points requiring attention.



IDLING ADJUSTMENT:—Air bleed type operating on air. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle (adjust throttle lever stop screw if necessary to keep engine from stalling). Turn idling adjusting screw out until engine begins to hesitate or miss, then turn screw in until engine fires smoothly and maximum speed is attained. Idling screw operates on air and should be turned out for leaner mixture and in for richer mixture. After idling adjustment has been completed readjust throttle stop screw if necessary to secure correct idling speed.

If correct idling adjustment cannot be secured, take out idle discharge hole plug and clean out idling ports with compressed air. The idling tube can also be taken out and cleaned with air if the carburetor is disassembled.

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HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jet is of the 'fixed' type and is not adjustable. Jet size is stamped on outer face of jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuel or operating conditions of the engine such as high altitudes.

Economizer is controlled by a vacuum piston. At intermediate speeds below 60 M.P.H. or partial throttle positions, economizer valve remains closed so that all fuel for main discharge jet is metered by main metering jet. When the throttle is opened the economizer needle plunger is forced down, opening the economizer valve, and allowing additional fuel to flow through the economizer restriction (by-pass jet) to the discharge jet. Economizer is not adjustable and should not require attention.

ACCELERATING PUMP:—Accelerating pump is operated by a lever and cam on the throttle valve shaft. The pump reducer or metering jet located on the bottom of the carburetor meters the fuel delivered by the pump.

Adjustment:—Pump operating cam on throttle valve lever has three holes to secure varied pump stroke. The center hole providing a medium pump stroke should be used for ordinary temperature ranges and ordinary gasoline. The upper connecting hole providing a minimum pump stroke should be used for hot weather or high test gasoline. Lower connecting hole providing maximum pump stroke should be used for very low temperatures.

FLOAT LEVEL:—Fuel level in float chamber is set at exactly 9/16" below the top edge of the float chamber (gasket removed) with engine not running. Float level can be changed to correct fuel level by bending float lever at the corner between the float and the needle valve. To check float level, measure distance from gasket seat on float chamber cover (gasket removed) to top of float at the center. This distance should be 23/64" (UR-2) or 9/32" URO-2). For high test gasolines as used in some foreign countries float level of UR-2 models should be changed to 13/32".

On Rockne models check float level by measuring distance from gasket seat on float cover to bottom of float at the center. This distance should be 1 5/16".

THROTTLE-CRACKING DEVICE:—On the Model URO-2 carburetor choke valve and throttle valve are connected so that throttle valve is opened .046" with choke valve fully closed to facilitate starting. This can be checked by fully closing choke valve and noting throttle position. To set 'throttle-cracking' linkage, insert a #56 drill between the edge of the throttle valve and the carburetor barrel, close throttle against the drill, loosen adjusting screws on linkage, close choke tightly and tighten adjusting screws. Check adjustment to make certain that choke valve opens completely.

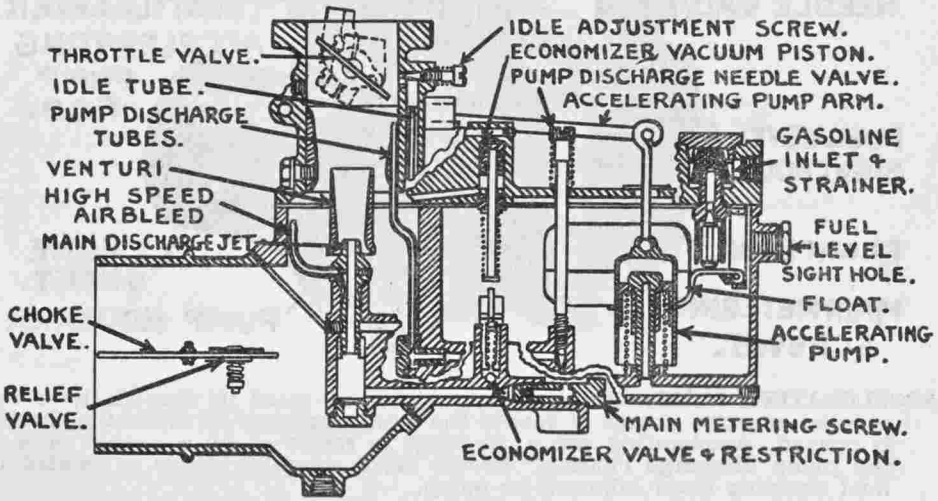
CHOKE:—Choke valve is fitted with relief poppet valve to prevent over-choking. Adjust choke valve linkage so that choke valve is closed tightly with choke control button on instrument panel pulled all the way out and wide open with control button pushed all the way in.

UUR-2—CUNNINGHAM, MODEL V-9 (1931).
CUNNINGHAM, MODEL V-10 (1932-33).
HUPMOBILE 222, SERIES F (1932).
HUPMOBILE 226, SERIES I (1932).
HUPMOBILE 322, SERIES F (1933).
HUPMOBILE 326, SERIES I (1933).
MARMON, MODEL 8-125 (1932).
NASH, SERIES 9-80 (1931-32), 10-80 (1932), 11-80 (1933).
NASH, SERIES 8-90 (1931), 9-90 (1931-32), 10-90 (1932), 11-90 (1933).
PIERCE ARROW, MODELS 41, 42, 43 (1931).
PIERCE ARROW, MODEL 54 (1932).
STUDEBAKER DICTATOR EIGHT, MODEL 61 (1931).
STUDEBAKER COMMANDER EIGHT, MODEL 70 (1931).
STUDEBAKER PRESIDENT EIGHT, MODELS 80, 90 (1931).
STUDEBAKER DICTATOR EIGHT, MODEL 62 (1932).
STUDEBAKER COMMANDER EIGHT, MODEL 71 (1932).
STUDEBAKER PRESIDENT EIGHT, MODELS 81, 91 (1932).

TYPE:—Twin updraft type with accelerating pump and vacuum economizer. There are two carburetor barrels with independent main discharge jet assemblies and throttle valves (throttle valves operate on the same shaft so that synchronization of throttles is not necessary). Barrels are fed from the main metering jet channels so that all fuel for main discharge jets is metered by main metering jets (under float bowl) and controlled by the vacuum economizer. Main discharge jets are air bled (by tubes on discharge jets in mixing chamber) to control mixture so that fuel flow through jets is restricted at partial throttle (high vacuum) and increased at open throttle (low vacuum). An independent idle adjustment is provided for each carburetor barrel. The idle adjustment and accelerating pump adjustment are the only points requiring attention.

IDLE ADJUSTMENT:—Needle valve type operating on gasoline. There are two idle ports in each carburetor barrel, an upper port (controlled by idle adjustment needle valve) which supplies fuel for car speeds of 5-10 M.P.H. and a lower port (non-adjustable) which operates in conjunction with the upper port to supply fuel for car speeds of 10-20 M.P.H. Both idle ports operate in conjunction with the main discharge jet to supply fuel for speeds of 20 M.P.H. to appproximately 30 M.P.H. when all fuel is supplied by the main discharge jet.

Adjustment:—If carburetor is out of adjustment, turn both idling adjustment screws in until they seat and then back off 2 or 3 turns. Start engine and adjust throttle lever stop screw until engine runs at approximately 5-6 M.P.H. Run engine until it is thoroughly warmed up. Turn in idling screw on inner carburetor barrel until it seats. This will cut off fuel supply to four cylinders on eight cylinder engines so that engine will fire on four cylinders. Adjust idling screw of outer barrel until engine fires smoothly. Then turn out idling screw on inner barrel until engine fires smoothly on all eight cylinders. Readjust throttle lever stop screw if necessary to secure correct idling speed.



If is not desired to adjust one barrel at a time with engine firing on four cylinders, adjust each idling adjustment individually by turning idling screw in until engine begins to miss or is rough and then turn screw out until engine fires smoothly. This point can also be determined by turning screw in until engine begins to miss and then out until engine begins to roll. The correct setting should be midway between these points. Idling screws operate on gasoline mixture and turning screw in or clockwise causes a leaner mixture and out or counter-clockwise a richer mixture.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets are fixed and cannot be adjusted. Metering jet size is stamped on the outer face of the jet in decimal fractions of an inch. To determine whether jet size is too small for particular operating conditions of the engine, with engine running at speed above 20-30 M.P.H., gradually close choke valve and note whether engine speed increases. If engine picks up speed as choke is closed the main metering jet is clogged or is too small. Clean jet with compressed air and repeat test.

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At speeds up to 60 M.P.H. vacuum in economizer piston chamber (chamber is connected to carburetor barrel) will be sufficient to hold piston up against economizer spring tension so that economizer valve will remain closed. At speeds of 60-70 M.P.H. the drop in vacuum will allow spring to force piston downward, opening economizer valve and allowing additional fuel to flow past the economizer valve seat and through the economizer jet to the main metering jet channels. Economizer does not require attention.

ACCELERATING PUMP:—Pump is operated through a cam-and-lever arrangement by the throttle shaft and discharges fuel through the pump discharge tube in each carburetor barrel when the throttle is opened. Pump discharge is controlled by an adjustable needle valve located in the pump discharge channel so that all fuel discharged by the pump passes through this valve.

Adjustment:—Accelerating pump adjusting needle valve is located on float chamber cover directly below idling adjustments. Correct setting for normal conditions should be 1-1½ turns open. To check throttle pump setting, retard spark, run engine at idling speed and note performance when throttle is opened. If engine hesitates opening is too small and needle valve should be backed out or opened slightly. If engine stumbles in picking up speed opening is too large and needle valve should be turned down slightly. Check adjustment by operating car at speed of 5 M.P.H. on level road in high gear. Open throttle suddenly and note performance. If car hesitates, setting is too small. If car stumbles, setting is too large. This will be particularly noticebale as engine warms up.

FLOAT LEVEL:—There is a float level sight hole closed by a plug on the side of the float chamber. With the engine not running gasoline level in float chamber should be even with the lower edge of the sight hole. To correct float level, take off top half of carburetor body by taking out body connecting screws and accelerating pump adjusting needle valve. To raise float level, bend float lever arm at the corner where it touches float and float needle valve so that float is raised the desired amount. To lower float level, hold float lever tight against needle valve and bend float downward. Top of float should be approximately 17/64" below top face of float chamber (gasket removed) with float needle seated.

CHOKE:—Choke valve is fitted with a relief poppet valve which opens when engine begins to fire so that engine will continue to run. Choke linkage should be adjusted so that choke valve is fully closed with choke button on instrument panel pulled all the way out and fully open when button is pushed all the way in.

DX-3—CHRYSLER EIGHT, MODEL CD (1931).
CHRYSLER EIGHT, MODEL CDX (1931).
DE SOTO EIGHT, MODEL CF (1931).
DODGE EIGHT, MODEL DG (1931).

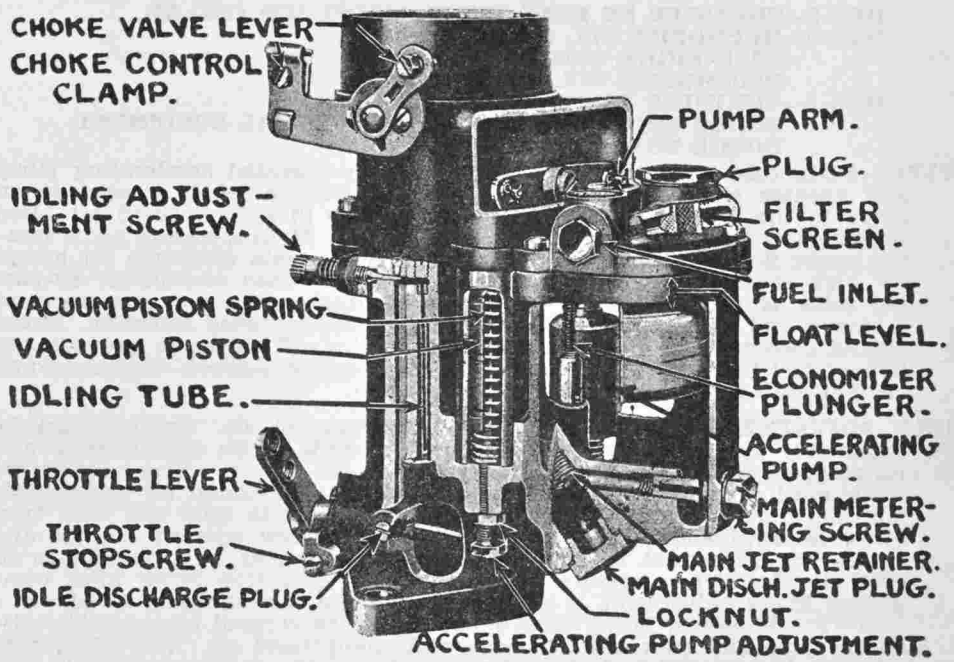
TYPE:—Plain tube downdraft type with vacuum controlled accelerating pump and economizer. Main discharge jet is located at an angle in the venturi and is air bled by means of a high speed air bleeder tube mounted vertically on the jet near the tip. Main metering jet is located under float bowl and meters all fuel for main discharge jet except for high speed or wide open throttle operation (with economizer by-pass jet valve open). Idle adjustment and accelerating pump adjustment are the only points requiring attention.

IDLE ADJUSTMENT:—Needle valve type operating on air. Engine must be warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle. Adjust idling adjustment screw until engine fires smoothly and speed is at maximum for throttle position (turn idling screw out until engine begins to miss and then turn screw in until engine fires smoothly). Idling screw operates on air and should be turned out for leaner mixture and in for richer mixture. Adjust throttle lever stop screw after completing idling adjustment, if necessary, to secure correct idling speed.

NOTE:—If correct idling adjustment cannot be secured, take out idle discharge plug and blow out idle ports with compressed air. The idling tube can also be removed and cleaned with compressed air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jet (under float bowl) which meters all fuel except for high speed or wide open throttle operation is of the 'fixed' type and is not adjustable. Jet size is stamped on outer face of jet in decimal fractions of an inch.

The spring on the economizer plunger will hold the plunger on its seat (closing economizer valve) for partial throttle operation so that all fuel for main discharge jet is metered by main metering jet. At high speeds or with wide open throttle the drop in vacuum in the vacuum piston chamber will allow the vacuum piston spring to force the piston upward, depressing the economizer needle plunger, opening the economizer valve and permitting additional fuel to flow through the economizer restriction (by-pass jet) to the main discharge jet. Economizer is not adjustable and does not require attention.



ACCELERATING PUMP:—Pump is similiar in design to that used on 'U' type carburetors except that it is operated through a walking beam connection by a vacuum controlled, spring operated piston (vacuum piston) instead of being positively connected to the throttle lever.

Adjustment:—Accelerating pump stroke is adjustable by means of an adjusting screw and lock nut located directly below the vacuum piston. Pump stroke is set at the factory for normal operating conditions. To increase pump stroke for cold weather operation, loosen lock screw and turn adjusting screw down or counter-clockwise. To decrease pump stroke for hot weather operation, loosen lock nut and turn adjusting screw up or clockwise. Tighten lock nut after making adjustment. To check pump setting, run engine at idling speed, retard spark, open throttle quickly and note engine performance. If engine hesitates, pump setting should be increased by turning screw down slightly. If engine stumbles in picking up speed, pump stroke should be decreased by turning screw up slightly. In adjusting pump the adjusting screw should be turned one turn at a time and the setting checked. A more satisfactory test can be made by running the car in high gear on a level road at approximately 5 M.P.H. and noting performance when engine is quickly accelerated.

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FLOAT LEVEL:—Fuel level in float bowl is set at 7/8" below the top edge of the float chamber with engine not running. To check float level with carburetor disassembled, remove float cover gasket, invert cover and measure distance from gasket seat to top of float (top when not inverted) at the center of the float. Correct setting should be 23/64". Float level can be corrected by bending float lever at the bend in the lever where it touches the float and the needle valve. To raise float level, bend float up toward bowl cover. To lower float level, hold lever tight against needle valve and bend float down away from bowl cover.

CHOKE:—Choke valve is fitted with a spring loaded flapper or poppet valve which opens when engine begins to fire. Choke linkage should be adjusted so that choke valve is fully closed when choke control on instrument panel is pulled all the way out and wide open when choke control button is pushed all the way in.

DXC-3—CHRYSLER DE LUXE EIGHT, MODEL *CD (1931-32).
DXR-2—HUPMOBILE SIX, SERIES 216 (1932).
NASH EIGHT, MODEL 9-70 (1931-32).
OLDSMOBILE SIX, MODEL F-31 (1931).
DXR-3—CHRYSLER EIGHT, MODEL CP (1932).
DODGE EIGHT, MODEL DG (1931)—SPECIAL EQUIPMENT.
DODGE EIGHT, MODEL DK (1932).

TYPE:—Plain tube downdraft type with positively operated accelerating pump and vacuum controlled economizer. Main discharge jet is located at an angle in the venturi and is air bled by means of a high speed air bleed tube mounted vertically on the jet near the tip. Main metering jet is located under float chamber and meters all fuel for main discharge jet except for high speed or wide open throttle operation (when economizer by-pass jet valve is open). Idle adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention. Model DXC-3 carburetor is fitted with automatic shut-off valves to prevent any flow of fuel from the float chamber with the engine stopped (see paragraph on 'Shut-off Valves' for test and adjustment).

IDLE ADJUSTMENT:—Needle valve type operating on air. Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, close throttle and allow engine to idle. Adjust idling adjustment screw until engine fires smoothly and speed is at maximum for the throttle position (turn idling screw out until engine begins to miss and then turn screw in until engine fires smoothly). Idling screw operates on air and should be turned out or counter-clockwise for leaner mixture and in or clockwise for richer mixture. Adjust throttle lever stop screw after completing idling adjustment, if necessary, to secure correct idling speed.

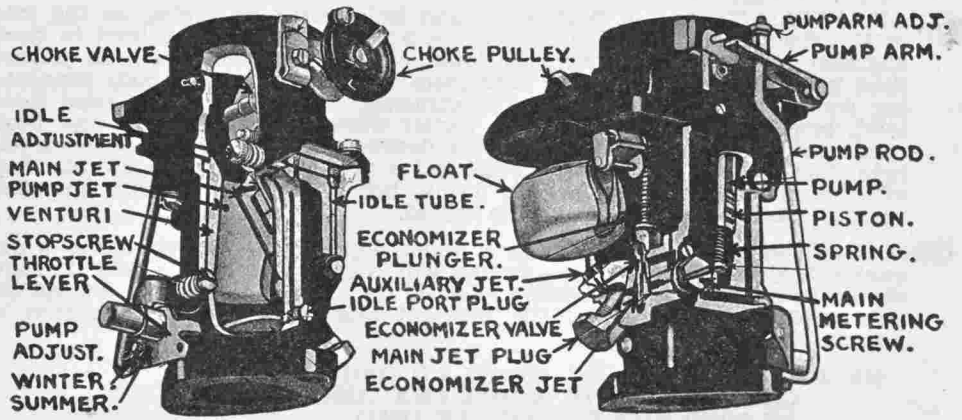
NOTE:—If correct idling adjustment cannot be secured take out idle discharge plug and blow out idle ports with compressed air. The idling tube can also be removed and cleaned with compressed air if carburetor is disassembled.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—All fuel for main discharge jet is metered by main metering jet (DXC-3) or main metering jet and auxiliary jet (DXR-2, 3). These jets are of the 'fixed' type and are not adjustable. Jet size is stamped on outer face of jet in decimal fractions of an inch. Jets should not be changed except to compensate for special fuels or operating conditions, such as high altitude.

Economizer needle valve remains closed, preventing any fuel flowing through economizer restriction (by-pass jet) for partial throttle operation. At high speed or wide open throttle the drop in vacuum will allow the economizer plunger spring to force the plunger down, opening the economizer needle valve, and allowing additional fuel to flow through the by-pass jet to the main discharge jet. Economizer is not adjustable and does not require attention.

ACCELERATING PUMP:—Pump is similar in design to that used on 'U' type carburetors except that pump lever is positively connected to throttle lever and operates when throttle is opened. Throttle valve plate has two (DXC) or three (DXR) holes for engagement of pump operating rod to provide varied pump stroke. Center hole providing medium pump stroke should be used for standard gasoline and normal temperature ranges. Engage pump rod in end hole (right hand) to provide minimum pump stroke for summer operation in hot climates. Engage pump rod in end hole (left hand) to provide maximum pump stroke for winter operation or extremely cold temperatures. The nut on the upper end of the pump rod is used to adjust the automatic shut-off valves on the Model DXC-3 carburetors.

SHUT-OFF VALVES:—On the Model DXC carburetor all fuel flowing to the jets from the float chamber passes through two automatic shut-off valves, one of which is controlled by the economizer (fuel for idling) and the other operated by the throttle valve through the accelerating pump linkage (main fuel supply for speeds above idling). The idling shut-off valve is built in the economizer directly above the economizer needle valve so that when the engine is shut off (no vacuum in manifold) the economizer closes this fuel valve. When the engine is started and idled with closed throttle the high vacuum in the carburetor above the throttle valve will pull the economizer plunger up, allowing the economizer spring to open the shut-off valve and by-pass fuel for idling past the main shut-off valve to the main metering jet. The main shut-off valve is operated by an arm or 'walking beam' which engages the shut-off valve pin and the accelerating pump sleeve so that the shut-off valve is closed with the throttle closed (when the pump sleeve is at the upper end of its stroke). When the throttle is opened the shut-off valve is released and is opened by the spring on the valve pin, allowing fuel to flow from the float chamber through the valve to the main metering jet.



Adjustment:—To check operation of shut-off valves, run engine at idling speed, turn off ignition, loosen main metering jet and note whether gasoline flows out at this point. Not more than a few drops of fuel should flow from this opening with throttle closed and the flow should begin as soon as throttle is opened slightly. To adjust shut-off valve, loosen lock nut and turn adjusting nut at top of pump rod above pump lever. Adjusting nut should be screwed up to close shut-off valve sooner and down to close valve later. Tighten lock nut after completing adjustment.

FLOAT LEVEL:—Fuel level in float bowl is set at 5/8" (DXC) or 9/16" (DXR) below the top edge of the float chamber with engine not running. To check float level with carburetor disassembled, measure distance from gasket seat on float bowl cover (with gasket removed) to top of float at center. This distance should be 13/64" (DXC) or 23/64" (DXR). Float level can be changed by bending float lever at the corner between the float and the needle valve. To lower float level, bend float down. To raise float level, hold lever tight against needle valve and bend float up toward cover.

CHOKE:—Choke valve is fitted with a relief poppet valve which will open when engine begins to fire. Adjust choke linkage so that choke valve is fully closed when choke button on instrument panel is pulled all the way out and wide open when choke button is pushed all the way in.

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DD-3—CHRYSLER IMPERIAL EIGHT, MODEL CG 1931).
CHRYSLER IMPERIAL EIGHT, MODEL CH (1932).
CHRYSLER CUSTOM IMPERIAL, MODEL CL (1932).
HUPMOBILE, MODELS H & U (1931).
LINCOLN V-8 MODEL (1931).
LINCOLN V-8 MODEL (1932).
LINCOLN MODEL V-12 (1932).
LINCOLN V-12-145 MODEL (1933).

DDR-3—MARMON, SIXTEEN CYLINDER MODEL (1931-32-33).

TYPE:—Dual barrel plain tube downdraft type with vacuum controlled accelerating pump and economizer. There are two carburetor barrels with independent main metering jets, auxiliary jets (Lincoln), main discharge jets, throttle pump jets, throttle valves and idling adjustments. Throttle valves operate on separate shafts and are geared together so that both throttles are operated by a lever on one shaft (throttle valves will not require adjustment until factory setting has been tampered with). Main metering jets and auxiliary jets (when used) are located at bottom of float chamber and meter all fuel flowing to main discharge jets except for high speed or wide open throttle operation (when economizer will by-pass additional fuel). Main discharge jets are mounted at an angle in the venturi and are air bled by high speed air bleed tubes mounted vertically on the jets near the tip. Idle adjustments and accelerating pump adjustment are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type operating on air. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle. Adjust inner idling adjusting screw (left hand) until fastest and smoothest running position is found (turn screw out until engine begins to hesitate or miss and then turn screw in until engine fires smoothly). Adjusting screws operate on air and should be turned out for leaner mixture and in for richer mixture. Adjust outer or right hand idling adjustment screw controlling the other carburetor barrel similarly. If necessary readjust inner idling screw slightly to secure smooth running. Idling adjustments should be set slightly rich. Correct idling adjustment cannot be secured if throttles are not synchronized. If engine does not fire smoothly with both idling adjustments correctly set, the adjusting screw on the right hand barrel throttle shaft should be turned clockwise to open right hand barrel throttle valve, or counter-clockwise to close throttle valve (relative to throttle valve in left hand barrel). It will not be necessary to change this adjustment unless factory setting has been tampered with. After idling setting has been completed, adjust throttle lever stop screw, if necessary, to secure correct idling speed.

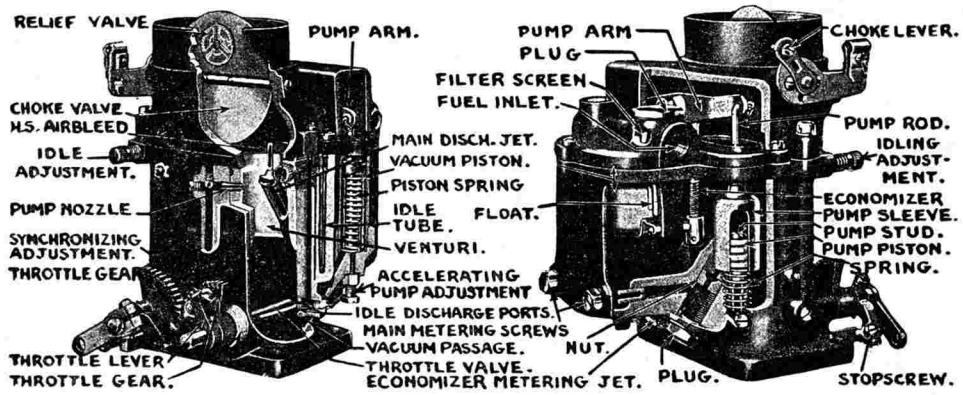
On engines with two ignition coils where ignition for four cylinders or one bank of 'V' type engines is provided by one coil, ignition can be cut off for the cylinders fed by one carburetor barrel by disconnecting one coil primary lead or grounding the coil high tension lead to the engine block. The engine will then idle on the remaining cylinders fed by the second carburetor barrel and the idling adjustment for this barrel can then be made. After each carburetor barrel has been adjusted in this manner, engine should be idled on all cylinders and any necessary readjustment made to secure smooth running.

If correct idling adjustment cannot be secured, remove idle discharge plugs and blow out idle ports with compressed air. Idling tubes can also be removed and cleaned with compressed air if carburetor is disassembled.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—All fuel for speeds up to approximately 60 M.P.H. is metered by main metering jet or main metering jet and auxiliary jets on Lincoln. Jets are of the 'fixed' type and are not adjustable. Jet size is stamped on outer face of jet in decimal fractions of an inch. Jet sizes should be changed only to compensate for fuel changes or operating conditions, such as high altitude. Lincoln jets have been changed in service and on some models main metering jet is plugged and all fuel is metered by auxiliary jets in bottom of float chamber (see Lincoln Specifications below).

At car speeds up to approximately 60 M.P.H. economizer needle plunger is held against its seat by the tension of the spring on the plunger so that no fuel can flow through by-pass jet (economizer restriction) and all fuel for main discharge jets is metered by main metering jets and auxiliary jets. At speeds above 60 M.P.H. or with wide open throttle, the drop in vacuum in the vacuum piston chamber will allow the vacuum piston spring to force the piston up, depressing the economizer needle plunger, opening the economizer valve and permitting additional fuel to flow through the by-pass jet to the main discharge jets. Economizer is not adjustable and does not require attention.

ACCELERATING PUMP:—Accelerating pump design and operation is exactly the same as on 'D' type carburetors (see article on DX-3 Carburetor) except on Marmon Model DDR-3, where accelerating pump is positively connected to throttle shaft lever and is operated by the throttle.



Adjustment:—For all DD Carburetors. Accelerating pump stroke is adjustable by means of an adjusting screw and lock nut on the bottom of the vacuum piston housing. Pump stroke is set for normal operating conditions at the factory. To increase pump stroke for cold weather operation, loosen lock nut and turn adjusting screw down or counter-clockwise. To decrease pump stroke for hot weather, loosen lock nut and turn adjusting screw up or clockwise. Tighten lock nut after making adjustment. To check pump setting, run engine at idling speed with retarded spark, open throttle quickly and note engine performance. If engine hesitates, pump stroke should be increased by turning adjusting screw down slightly. If engine stumbles in picking up speed, pump stroke should be decreased by turning adjusting screw up slightly. In making this adjustment, adjusting screw should be changed one turn at a time and setting checked. A more satisfactory test can be made by running the car in high gear on a level road at approximately 5 M.P.H. and noting performance when engine is quickly accelerated.

FLOAT LEVEL:—Fuel level in float bowl is set exactly 1″ below top edge of float chamber on Chrysler models. To check float level with carburetor disassembled, measure distance from gasket seat on float bowl cover (with gasket removed) to the top of the float at the center. Correct setting should be 13/32″ (Chrysler) or 15/32″ (Lincoln). Float level can be corrected by bending float lever at the corner between the float and the needle valve. To lower float level, bend float down away from cover. To raise float level, hold lever tight against needle valve and bend float up toward cover.

CHOKE:—Choke valve is fitted with a relief poppet valve which opens when engine begins to fire. Choke linkage should be adjusted so that choke valve is fully closed with choke button on instrument panel pulled all the way out and wide open with choke button pushed all the way in.

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LINCOLN SPECIFICATIONS:—On 1931 Lincoln carburetors main metering jet size was changed from .043 to .030. The Lincoln factory advised that on early carburetors (marked .043) where trouble was experienced, the hole in end of the main metering jets should be closed with solder and the auxiliary jets changed from .070 to .054 (auxiliary jets are located in the bottom of float chamber under float). Main discharge jet plugs were also replaced with a plug having a tube extending down into the well. This change was made by replacing the retainer plug with one threaded on the inside so that the main discharge jet tube could be screwed in place. These tubes were drilled with a #60 hole on the side directly below the threaded end. First cars equipped with the discharge jet tubes did not have this hole and these tubes should be replaced where vapor lock is experienced. Lincoln Part Nos. for these parts are as follows:

Main Discharge Jet Retainer Plug.....Part K-2222—2 required.
Main Discharge Jet Tube (#60 hole).....Part K-2223—2 required.
Auxiliary Metering Jet (Size .054).....Part K-2189—2 required.

On 1932 Lincoln models the carburetor used on the V-8 engine is equipped with main metering jets and auxiliary jets in the bottom of the float chamber. On the V-12 model the main metering jets are replaced with blank plugs (not marked) and all fuel is metered through the auxiliary jets (called main metering jets). The high speed air bleeder on the V-8 carburetor is Size #70, and #60 on the V-12 model.

E-2— NASH SIX, SERIES 10-60 (1932).
EX-2— REO FLYING CLOUD SIX, MODEL S-1 (1932).
EC-2—*OLDSMOBILE SIX, MODEL F-32 (1932).
EX-22— DODGE SIX, MODEL DP (1933).
NASH BIG SIX, SERIES 1120 (1933).
NASH STANDARD EIGHT, SERIES 1130 (1933).
EX-32—*CHRYSLER SIX, MODEL CO (1933).
CHRYSLER ROYAL EIGHT, MODEL CT (1933).
CHRYSLER IMPERIAL EIGHT, MODEL CQ (1933).
***REO FLYING CLOUD, MODEL S-2 (1933).**
EX-3—AUBURN, MODEL 8-105 (1933).

***See special articles on Stromberg and Sisson Automatic Chokes.**

TYPE:—Plain tube downdraft type with positively operated accelerating pump and economizer (connected to throttle valve). Main discharge jet is located at an angle in the venturi and is air bled by means of an air bleed hole drilled in the auxiliary venturi support. Main metering jet is located directly under main discharge jet and meters all fuel for discharge jet. Accelerating pump and economizer discharge fuel into mixing chamber through pump discharge nozzle located within primary venturi. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

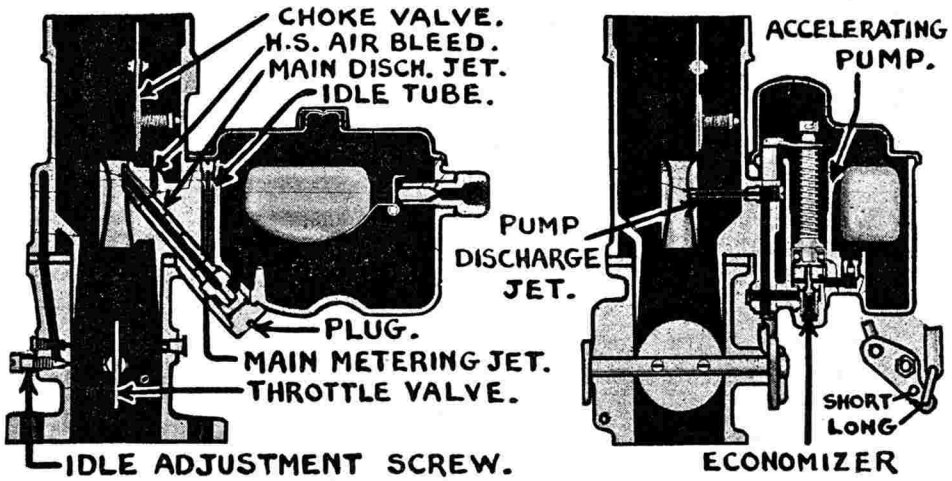
For description and adjustment of Stromberg and Sisson Automatic Chokes used on Chrysler, Oldsmobile and Reo Models see special articles on this equipment.

IDLING ADJUSTMENT:—Needle valve type operating on gasoline. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and idling, close throttle and idle engine (adjust throttle lever stop screw if necessary). Turn idling adjustment screw in until engine begins to miss and then back off screw until engine fires smoothly and maximum speed is attained for the throttle position. Adjusting screw operates on gasoline and should be turned in to secure leaner mixture and out for richer mixture. Readjust throttle lever stop screw if necessary to secure correct idling speed of engine.

NOTE:—There are two idling ports, an upper idling port (for low speed) above the throttle valve, and a lower port (for idling with closed throttle) below the throttle valve. The idling adjusting screw controls the fuel mixture supply for the lower port. If correct idling adjustment cannot be secured or if low speed operation is unsatisfactory, take out idling adjustment screw and upper idling port plug and blow out ports with compressed air. The idle tube located in the carburetor body can also be taken out and cleaned with compressed air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jet which meters all fuel for main discharge jet is of the 'fixed' type and is not adjustable. Jets should not be changed except for special fuels or to compensate for special operating conditions such as high altitude.

Economizer is built in lower end of accelerating pump and is operated by pump piston. At speeds above 60 M.P.H. or with wide open throttle, economizer needle valve pin will be forced down, opening the economizer valve, and allowing additional fuel to flow through the valve and be discharged into the mixing chamber through the pump discharge nozzle. Economizer is correctly set at the factory and the adjustment should not be changed. If carburetor is disassembled, the position of the adjustment nut (at upper end of pump piston rod) should be noted so that adjustment will not be changed when pump is reassembled.



ACCELERATING PUMP:—Accelerating pump piston rod is connected to a pump operating rod under the float chamber cover (all models except EC-2) or to a walking beam operated by the throttle lever (EC-2). On the upstroke of the pump piston gasoline is drawn from the float chamber through the pump check valve into the pump chamber. On the downstroke of the piston when the throttle is opened, this fuel is forced out through the economizer needle valve and discharged through the pump discharge nozzle into the mixing chamber. The closing of the check valve prevents fuel flowing back into the float chamber. When the throttle is held open the economizer needle valve is opened by the pump piston and additional fuel is discharged through the pump nozzle. This fuel is metered by the pump discharge nozzle or restriction.

Adjustment:—Throttle lever has two holes for engagement of pump rod link to provide varied pump stroke. Inner hole providing short pump stroke should be used for summer driving or average temperatures. Outer hole at end of lever should be used to provide maximum pump stroke for winter driving.

FLOAT LEVEL:—Fuel level in float chamber is set at factory at exactly 9/16" below top edge of float chamber. Float level can be changed to correct fuel level by bending float lever at the point where it meets the float or by changing the gasket under the needle valve seat.

CHOKE:—See special articles on Stromberg and Sisson Automatic Chokes. Choke valve is provided with a relief poppet valve which will open when engine begins to fire and will prevent over-choking. On cars with conventional choke control, see that choke linkage is adjusted so that choke valve is fully closed with choke button pulled all the way out and wide open with choke control button pushed all the way in.

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EC-22—OLDSMOBILE SIX, MODEL F-33 (1933).
EX-22—STUDEBAKER SIX, MODEL 56 (1933).
These models equipped with Stromberg Automatic Choke and Fast Idle.

TYPE:——Plain tube downdraft type. These models are similar in design and operation to other EC and EX types except for 'Fast Idle' mechanism. Fast idle is set to idle engine at speed of approximately 15 M.P.H. when engine is cold and idling adjustment should not be made until engine warms up sufficiently to return to slow idle (6 M.P.H.). See special articles on Stromberg Automatic Choke and Fast Idle.

Special Settings	EC-22	EX-22
Fast idle—Engine speed cold	15 M.P.H.	15 M.P.H.
Slow idle—Engine speed warm	6 M.P.H.	8 M.P.H.
Automatic Choke Setting	14 Notches Rich	16 Notches Rich.

Fast idle speed is set by loosening lock nut and turning adjusting screw on Fast Idle control linkage (see special article). Slow idle speed is set by adjusting throttle lever stop screw after idling adjustment has been completed. Automatic Choke setting is adjusted by turning automatic choke case (see special article).

E-2—PIERCE ARROW TWELVE, MODELS 51, 52, 53 (1932).
EX-2—AUBURN TWELVE, MODEL 12-160 (1932).
AUBURN TWELVE, MODEL 12-161 (1933).
AUBURN TWELVE, MODEL 12-165 (1933).
EX-32-PIERCE ARROW TWELVE, MODELS 1236, 1242, 1247 (1933).
Model EX-32 is equipped with Stromberg Automatic Choke and Fast Idle.

TYPE:—Twin installation consisting of two single barrel, downdraft, plain tube carburetors with inter-connected throttle and choke controls. Each carburetor supplies one bank of the 'V' type engine. Carburetors are similar to other 'E' type carburetors in design, operation and adjustment except that throttles must be synchronized as part of idle adjustment and choke control must be adjusted so that both choke valves open and close together. Model EX-32 on 1933 Pierce Arrow Twelve is fitted with Automatic Choke and Fast Idle (see special article). Idle adjustment on this model should not be made until engine has warmed up sufficiently so that engine speed has decreased to 'slow idle'.

IDLE ADJUSTMENT:—Throttle shaft connecting throttles of right and left hand carburetors is provided with an adjustment so that throttles can be synchronized. This is part of idling adjustment. Engines must be warmed up before idling adjustment is made. With engine warm and running, close throttle, disconnect primary lead of coil supplying ignition for right hand cylinder bank (or ground high tension lead to engine), adjust throttle lever stop screw of left hand carburetor so that engine idles somewhat fast, unlock adjusting screw at right hand end of throttle connecting shaft, back out adjusting screw and throttle lever stop screw of right hand carburetor until throttle valve of right hand carburetor is closed, then adjust idling adjusting screw of left hand carburetor by turning screw in or out until smoothest running position is found. Idling screw operates on fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Then unlock adjusting screw at left hand end of throttle connecting shaft and turn screw out until compression of spring under this screw is sufficient to hold right hand carburetor throttle valve closed, lock adjusting screw. Connect ignition for right hand cylinder bank and disconnect ignition for left hand bank. Adjust throttle lever stop screw of right hand carburetor for correct engine speed, adjust idling screw of right hand carburetor by turning screw in or out until smoothest running position is found. Then turn up adjusting screw at right hand end of connecting shaft until it just touches the throttle lever. Note speed of right hand cylinder bank, cut off ignition for right hand bank, connect ignition for left hand bank and note idling speed. If speed is not the same for both banks this should be equalized by turning throttle lever stop screws on each carburetor, being careful that the adjusting screw at the right hand end of the connecting shaft is in contact with the throttle lever at all times. After adjustment is completed this screw should be locked.

1933 Auburn Model 12-165. On this model a new type throttle connecting shaft is used consisting of an independently mounted cross shaft connected to the throttle valve of each carburetor through a short adjustable rod with ball and socket connections. On this type throttles are synchronized by increasing or decreasing the length of the left hand rod (adjusting the idle for each bank separately as above).

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—All jets are fixed. Economizer is not adjustable (see article on 'EX' type carburetors).

ACCELERATING PUMP:—Similar in design and operation to pump used on other 'E' type carburetors. Throttle shaft lever has two holes for engagement of pump rod to provide for varied pump stroke. Pump rod should be connected in inner hole (shorter radius) providing shorter pump stroke for normal temperatures or summer operation. Outer hole (longer radius) providing maximum pump stroke should be used for winter operation.

FLOAT LEVEL:—Fuel level in float chamber is set at exactly 9/16″ below top edge of float bowl with gasket removed. Float level can be changed to correct fuel level by bending float lever at the point where it is connected to the float.

CHOKE:—See special article on Stromberg Automatic Choke for Pierce Arrow model on which this equipment is used. Where conventional choke control is used, choke valves must be synchronized so that they open and close together. With choke valves wide open and choke control button pushed in toward dash, connect choke control operating wire securely to each choke valve lever. Pull out control button to limit of travel and see if both choke valves are closed tightly. If one valve is not closed, loosen the clamp screw, close choke valve tightly and tighten screw. Choke valve is fitted with a relief poppet valve to prevent over-choking.

EE-2— FRANKLIN TWELVE CYLINDER, MODEL 17 (1932).
FRANKLIN TWELVE CYLINDER, MODEL 17-B (1933).
NASH EIGHT, SERIES 1070 (1932).
NASH EIGHT, SERIES 1170 (1933).
***OLDSMOBILE EIGHT, MODEL L-32 (1932).**
EE-22— LINCOLN TWELVE, MODEL V-12-136 (1933).
EE-3 —*PACKARD TWELVE, MODELS 905, 906 (1932).
***PACKARD TWELVE, MODELS 1005, 1006 (1933).**
***STUTZ DUAL VALVE EIGHT, MODEL DV-32 (1933).**

***See special articles on Stromberg Automatic Choke.**

TYPE:—Dual barrel plain tube downdraft type. These models are similar in design to other 'E' type carburetors except that each carburetor barrel has independent main discharge jets, main metering jets, throttle valves and idling adjustments. Throttle valves are mounted on a single shaft and will not require synchronization. Accelerating pump is positively operated by the throttle through a 'walking beam' connection mounted on the carburetor upper body. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

See special article on Stromberg Automatic Choke for complete description of adjustment and 'Choke' paragraph below for setting on each car model.

IDLING ADJUSTMENT:—Needle valve type operating on gasoline. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle. Adjust inner (left hand) idling adjustment screw for smoothest and fastest running position by turning idling screw in until engine begins to miss and speed decreases, then turn screw out until engine begins to roll, finally turn screw in until engine fires smoothly (final setting should be approximately half way between missing and rolling points). Adjust outer (right hand) idling adjustment screw in the same manner. Idling screw operates on fuel mixture and should be turned in for leaner mixture and out for richer mixture.

On 'V' type engines with two ignition coils where one coil furnishes ignition for one bank, ignition can be cut off for one bank by disconnecting the coil primary or grounding the coil high tension lead to the engine block so that the engine will idle on the remaining cylinders. The idle adjustment for the carburetor barrel feeding the cylinders which are firing can

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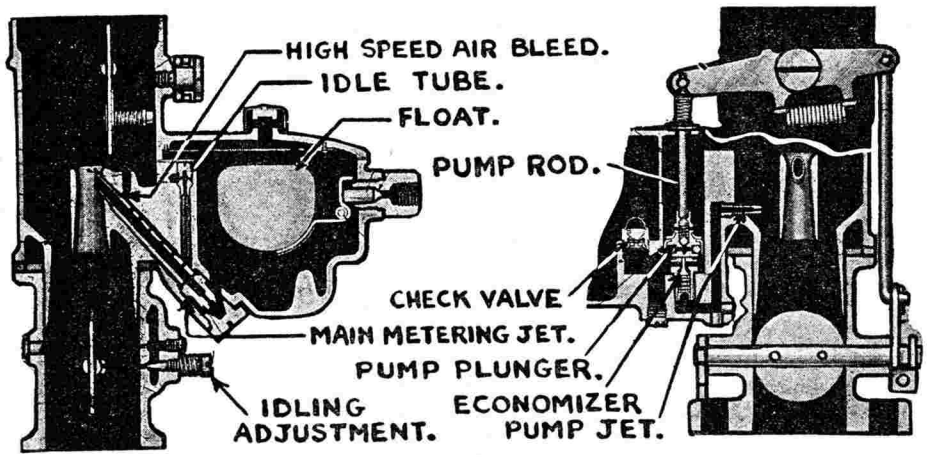
then be adjusted. The coil should then be reconnected and the other coil disconnected so that the engine will fire on the cylinders of the other bank. The idle adjustment for the carburetor barrel feeding this bank can then be adjusted. After both idling adjustments have been completed in this manner, engine should be idled on all cylinders and any necessary readjustment made to secure smooth running. The throttle stop screw can then be adjusted to secure correct idling speed.

If correct idling adjustment cannot be secured, take out idle adjusting screw and upper idling port plug and clean out idling ports with compressed air. The idling tubes located in the carburetor body can also be taken out and cleaned with compressed air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets which meter all fuel for main discharge jets are of the 'fixed' type and not adjustable. Jet size is stamped on the jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuels or operating conditions such as high altitudes.



Economizer is built in lower end of accelerating pump and is operated by pump piston. At speeds above 70 M.P.H. or with wide open throttle, economizer needle valve is forced down, opening the economizer valve, so that additional fuel flows through the valve and is discharged into the mixing chamber through the pump discharge nozzle. Economizer is not adjustable and does not require attention.

ACCELERATING PUMP:—Accelerating pump is operated through a walking beam arrangement by the throttle lever. Pump chamber is filled with fuel from the float chamber (flowing through the pump check valve) when the throttle is closed. When the throttle is opened, this fuel is discharged through the economizer valve and the pump discharge nozzle into the mixing chamber. Check valve prevents fuel being discharged back into the float chamber. When the throttle is held open, the piston opens the economizer needle valve so that fuel flows straight through the pump and is discharged through the pump nozzle. The pump discharge nozzle meters this fuel.

Adjustment:—Throttle lever has two holes for engagement of pump rod to provide varied pump stroke. Inner hole (shorter radius) providing short pump stroke should be used for average temperatures or summer operation. Outer hole providing maximum pump stroke should be used for winter operation.

FLOAT LEVEL:—Fuel level in float chamber is set at exactly 9/16" below top edge of float chamber (gasket removed). Float level can be changed to correct fuel level by bending float lever at the point where it is attached to the float.

CHOKE:—See special article on Stromberg Automatic Choke. Choke valve is provided with a relief poppet valve to prevent over-choking. On cars with conventional choke control, see that choke valve is fully closed with choke control button on instrument panel pulled all the way out and wide open with choke button pushed in.

Automatic Choke Settings

Oldsmobile Model L-32 (1932)	8 Notches Lean.
Packard 905, 906 (1932)	16 Notches Lean.
Packard 1005, 1006 (1933)	
Stutz Model DV-32 (1933)	

EE-22—OLDSMOBILE EIGHT, MODEL L-33 (1933).
PACKARD EIGHT, MODELS 1001, 1002 (1933).
PACKARD SUPER EIGHT, MODELS 1003, 1004 (1933).
STUDEBAKER COMMANDER, MODEL 73 (1933).
STUDEBAKER PRESIDENT, MODEL 82 (1933).
STUDEBAKER SPEEDWAY PRESIDENT, MODEL 92 (1933).

EE-3 —CHRYSLER CUSTOM IMPERIAL, MODEL CL* (1933).
PIERCE ARROW EIGHT, MODEL 836 (1933).

These models equipped with Sisson or Stromberg Automatic Choke and Fast Idle.

TYPE:—Dual barrel plain tube downdraft type. These models are similar to other 'EE' carburetors in design, operation, and adjustment except for 'Fast Idle' mechanism. Fast idle is set to operate engine at speed of approximately 15 M.P.H. when engine is cold and idling adjustment should not be made until engine has warmed up sufficiently to return to slow idle of about 6 M.P.H. Throttle is closed automatically by Fast Idle mechanism when engine warms up. See special articles on Stromberg and Sisson Automatic Chokes and Stromberg Fast Idle device.

Special Settings

Car Model	Fast Idle	Slow Idle	Automatic Choke (Sisson)
Chrysler Model CL*			
Oldsmobile Model L-33	15 M.P.H.	6 M.P.H.	14 Notches Rich.
Packard Model 1001, 1002	15 M.P.H.	8 M.P.H.	8 Notches Rich.
Packard Model 1003, 1004	15 M.P.H.	8 M.P.H.	8 Notches Rich.
Pierce Arrow Model 836			
Studebaker Model 73	15-20 M.P.H.	8 M.P.H.	16 Notches Rich.
Studebaker Model 82	15-20 M.P.H.	8 M.P.H.	16 Notches Rich.
Studebaker Model 92	15-20 M.P.H.	8 M.P.H.	8 Notches Rich.

Fast Idle speed is set by loosening lock nut and turning adjusting screw on Fast Idle control linkage (see special article). Slow idle speed is set by adjusting throttle lever stop screw after idling adjustment has been completed. Automatic Choke setting is adjusted by rotating automatic choke spring case (see special article).

STROMBERG UPDRAFT CARBURETORS

Car Model	Year	Carb. No.	Main Metering Jet		By-Pass Jet		Main Disc. Jet		H. S. Bleeder		Pump Reducer		Pump Disc. Tubes	
			Size	Part No.	Size	Part No.	Size	Part No.	Size	Part No.	Size	Part No.	Size	Part No.
AUBURN 8-100	1932	URO-2	.063"	P-12512	.030"	P-15405	#26	P-15376	—	—	#59	P-17144	—	—
" 8-101	1933	URO-2	.063"	P-12512	.030"	P-15405	#26	P-15376	—	—	#59	P-17144	—	—
CHRYSLER CM	1931	UR-2	.055"	P-15384	.038"	P-15405	—	P-15376	#65	P-15379	#66	P-15859	—	—
CUNNINGHAM V-9	1931	UUR-2	.054"	P-15494	Red.#70	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491
" V-10	1932-3	UUR-2	.054"	P-15494	#70	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491
DURANT 6-12, 6-14	1931	U-2	.058"	P-12512	.032"	P-12768	#32	P-14681	—	—	#66	P-13588	—	—
FRANKLIN 15	1931	U-3	.070"	P-12512	.049"	P-12768	A34-B28	P-14739	#64	P-12870	#60	P-14053	—	—
" 16	1932	U-3	.073"	P-12512	.049"	P-12768	A34-B28	P-14739	#64	P-12870	#57	P-14053	—	—
" 16-8	1933	URO-2	.062"	P-12512	.030"	P-15405	#24	P-15376	—	—	#60	P-15749	—	—
" 18	1933	URO-2	.062"	P-12512	.030"	P-15405	#24	P-15376	—	—	#60	P-15749	—	—
HUPMOBILE S-6	1931	U-2	.060"	P-12512	.040"	P-12768	#32	P-15340	—	—	—	P-13137	—	—
" L	1931	UU-2	.039"	P-14281	—	P-13127	A28-B20	P-13388	#70	P-12359	—	—	—	—
" C	1931	UU-2	.043"	P-14281	—	P-13127	A28-B20	P-13388	#70	P-12359	—	—	—	—
" L	1932	UUR-2	.044"	P-15494	—	P-15405	#30	P-13829	#70	—	—	—	#70	P-15491
" C	1932	UUR-2	.046"	P-15494	—	P-15405	#28	P-16455	#68	—	—	—	#70	P-15491
" F-222	1932	UUR-2	.044"	P-15494	—	P-15405	#30	P-13829	#70	—	—	—	#70	P-15491
" I-226	1932	UUR-2	.047"	P-15494	.020"	P-15405	#28	P-13829	#70	—	—	—	#70	P-15491
" F-322	1933	UUR-2	.043"	P-15494	.020"	P-15405	#28	P-13829	#70	—	—	—	#70	P-15491
" I-326	1933	UUR-2	.047"	P-15494	.020"	P-15405	#28	P-13829	#70	—	—	—	#70	P-15491
MARMON 70	1931	UX-2	—	P-12512	.031"	P-12768	#32	P-12750	—	—	—	P-13135	—	—
" 8-125	1931	UUR-2	.052"	P-12512	.048"	P-15405	#40	P-16445	#60	—	—	—	#74	P-15491
NASH 8-90	1931	UUR-2	.046"	—	Red.#68	—	#30	P-13829	#70	—	—	—	#70	—
" 9-80	1932	UUR-2	.043"	P-13395	.042"	P-15405	#40	P-13829	#70	—	—	—	#74	—
" 9-90	1932	UUR-2	.046"	—	Red.#68	—	#30	P-13829	#70	—	—	—	#70	—
" 10-80	1932	UUR-2	.051"	P-15384	.050"	P-15405	#40	P-13829	#70	—	—	—	#74	—
" 10-90	1932	UUR-2	.051"	P-15384	.050"	P-15405	#40	P-13829	#70	—	—	—	#74	—
PIERCE ARROW 51,2,3	1931	UUR-2	.050"	P-15494	Red.#68	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491
ROCKNE 65	1932	UR-2	.054"	P-15384	.036"	P-15405	#32	P-15376	#65	P-15379	#70	P-15857	—	—
" 75	1932	UR-2	.054"	P-15384	.036"	P-15405	#32	P-15376	#65	P-15379	#70	P-15857	—	—
" 10-31	1933	UR-2	.054"	P-15384	.036	P-15405	#32	P-15376	#65	P-15379	#68	P-15870	—	—
STUDEBAKER 54	1931	U-2	.060"	P-12512	—	P-12768	#32	P-14671	—	P-12870	#62	P-13135	—	—
" 61	1931	UU-2	.033"	P-14281	—	P-13127	—	P-13388	—	P-12359	—	—	—	—
" 70	1931	UU-2	.033"	P-14281	—	P-13127	—	P-13388	—	P-12359	—	—	—	—
" 61	1931	UUR-2	.046"	P-15494	#72	P-13127	#30	P-13829	—	—	—	—	#65	P-15491
" 70	1931	UUR-2	.046"	P-15494	#72	P-13127	#30	P-13829	—	—	—	—	#65	P-15491
" 80, 90	1931	UUR-2	.050"	P-15494	Red.#70	P-13127	#30	P-13829	—	—	—	—	#65	P-15491
" 55	1932	UR-2	.050"	P-15384	.036"	P-15405	#32	P-15376	#65	P-15379	#70	P-15857	—	—
" 62	1932	UUR-2	.046"	P-15494	#72	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491
" 71	1932	UUR-2	.046"	P-15494	#72	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491
" 81, 91	1932	UUR-2	.050"	P-15494	#70	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491

STROMBERG DOWNDRAFT CARBURETORS

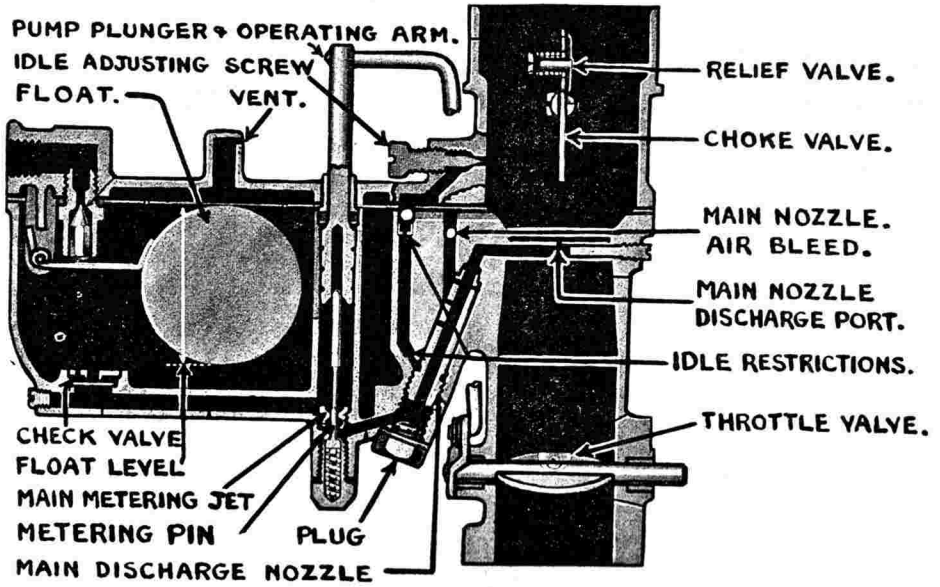
Car Model	Year	Carb. No.	Main Metering Jet Size	Main Metering Jet Part No.	Aux. Metering Jet Size	Aux. Metering Jet Part No.	By-Pass Jet Size	By-Pass Jet Part No.	Main Disc. Jet Size	Main Disc. Jet Part No.	H. S. Bleeder Size	H. S. Bleeder Part No.	Pump Nozzle Size	Pump Nozzle Part No.
AUBURN 12-160	1932	EX-2	.055″	P-17004	—	——	—	P-16965	#28	P-17005	—	——	#70	P-17020
" 12-161, 165	1933	EX-2	.055″	P-17004	—	——	—	P-16965	#28	P-17005	—	——	#70	P-17020
" 8-105	1933	EX-32	.060″	P-17004	—	——	—	P-18149	#28	P-17167	—	——	#70	P-18126
CHRYSLER CD	1931	DX-3	.065″	P-13395	—	——	.044″	P-12465	—	P-14332	#65	P-14334	#64	P-14622
" CDX	1931	DX-3	.061″	P-13395	—	——	.041″	P-12465	—	P-16582	#70	P-14334	#64	P-14622
" ★CD	1931	DXC-3	.062″	P-16400	—	——	.030″	P-16403	#33	P-16401	#65	P-12870	#68	P-14786
" ★CD	1931	DXR-3	.030″	P-13395	.055″	P-16362	.030″	P-15405	#33	P-16311	#65	P-12870	#68	P-14786
" CG	1931	DD-3	Blank	P-13395	.056″	P-16362	.040″	P-12465	—	P-14332	#70	P-14334	#66	P-14786
" CP	1932	DXR-3	Blank	P-16400	.066″	P-16362	.036″	P-16403	#33	P-16311	#60	P-12870	#68	P-14786
" CH, CL	1932	DD-3	Blank	P-13395	.056″	P-16362	.040″	P-12465	—	P-14332	#70	P-14334	#66	P-14786
" CO	1933	EX-32	.057″	P-17004	—	——	—	P-18149	#28	P-18548	—	——	#70	P-18126
" CT	1933	EX-32	.057″	P-17004	—	——	—	P-18149	#28	P-18548	—	——	#70	P-18126
" CQ	1933	EX-32	.065″	P-17004	—	——	—	P-18149	#28	P-17167	—	——	#68	P-18126
" CL*	1933	EE-3	.061″	P-17004	—	——	—	P-16965	#36	P-17969	—	——	#66	P-17454
DODGE DG	1931	DX-3	.061″	P-13395	—	——	.041″	P-12465	—	P-14332	#70	P-14334	#64	P-14622
" DK	1932	DXR-3	Blank	P-16400	.058″	P-16362	.024″	P-16403	#33	P-16311	#65	P-12870	#68	P-15879
" DP	1933	EX-22	.058″	P-17004	—	——	—	P-18149	#28-36	P-18226	—	——	#69	P-18126
FRANKLIN 17-17B	1932-3	EE-2	.062″	P-17004	—	——	—	P-16965	#36	P-17015	—	——	#68	P-18213
HUPMOBILE H, U	1931	DD-3	.062″	P-13395	—	——	—	P-12465	—	P-14332	#70	P-14334	#68	P-14786
" 216	1932	DXR-2	.030″	P-12512	.052″	P-16362	.034″	P-15405	#33	P-16311	#60	P-12870	#70	P-15879
LINCOLN V-8	1931	DD-3	.043″		#70	——	.046″	P-15927	—	P-14332	#70	P-14334	#68	P-14786
" V-8	1931	DD-3	.030″	P-15926	.054″	——	.046″	P-15927	—	P-14332	#70	P-14334	#68	P-14786
" V-8	1932	DD-3	.030″	P-15926	.044″	P-15432	.046″	P-15927	—	P-14332	#70	P-14334	#68	P-14786
" V-12	1932-3	DD-3	Blank	P-15926	.058″	P-16362	.046″	P-15927	—	P-14332	#60	P-14334	#68	P-14786
" V-12-136	1933	EE-22	.057″	P-17004	—	——	.060″	P-18149	#36	P-18483	—	——	#70	P-18213
NASH 9-70	1931	DXR-2 & E-2	.034″	P-12512	.048″	P-16362	.034″	P-15405	#33	P-16311	#56	P-12870	#68	P-15879
" 10-60	1932	E-2	.054″	P-17004	—	——	—	P-16965	#28	P-17005	—	——	#70	P-17020
" 10-70	1932	EE-2	.050″	P-17004	—	——	—	P-16965	#36	P-17015	—	——	#73	P-18213
" 11-20	1933	EX-22	.057″	P-17004	—	——	—	P-18149	#32	P-18241	—	——	#68	P-18126
" 11-30	1933	EX-22	.057″	P-17004	—	——	—	P-18149	#32	P-18241	—	——	#68	P-18126
" 11-70	1933	EE-2	.050″	P-17004	—	——	—	P-16965	#36	P-17015	—	——	#73	P-18213
OLDSMOBILE F-32	1932	EC-2	.056″	P-17004	—	——	—	P-16965	#28	P-17005	—	——	#64	P-17020
" L-32	1932	EE-2	.052″	P-17004	—	——	—	P-16965	#36	P-17015	—	——	#73	P-18213
" F-33	1933	EC-22	.057″	P-17004	—	——	—	P-18149	#32	P-18241	—	——	—	P-18126
" L-33	1933	EE-22	.049″″	P-17004	—	——	—	P-18344	#36	P-18338	—	——	—	——
PACKARD 905, 6	1932	EE-3	.064″	P-17004	—	——	—	P-16965	#36	P-17815	—	——	#60	P-17769
" 1001, 2	1933	EE-22	.056″	P-17004	—	——	—	P-18149	#36	P-17993	—	——	#70	P-18213
" 1003, 4	1933	EE-22	.060″	P-17004	—	——	—	P-18149	#36	P-17993	—	——	#70	P-18213
" 1005, 6	1933	EE-3	.058″	P-17004	—	——	—	P-16965	#28-36	P-18413	—	——	#65	P-17769
PIERCE ARROW 51,2,3	1932	E-2	.055″	P-17004	—	——	—	P-16965	#28	P-17167	—	——	#66	P-17020
" 836	1933	EE-3	.060″	P-17004	—	——	—	P-16965	#28	P-18296	—	——	#72	P-17454
" 1238, 42, 47	1933	EX-32	.059″	P-17004	—	——	—	P-18149	#28	P-17005	—	——	#68	P-18126
REO S-1	1932	EX-2	.056″	P-17004	—	——	—	P-16965	#28	P-17005	—	——	#64	P-17020
" S-2	1933	EX-32	.059″	P-17004	—	——	—	P-18149	#28	P-18548	—	——	#69	P-18126
STUDEBAKER 56	1933	EX-22	.054″	P-17004	—	——	—	P-18149	#28	P-18115	—	——	#70	P-18126
" 73	1933	EE-22	.054″	P-17004	—	——	—	P-18344	#36	P-17969	—	——	#74	P-18213
" 82	1933	EE-22	.054″	P-17004	—	——	—	P-18344	#36	P-17969	—	——	#74	P-18213
" 92	1933	EE-22	.062″	P-17004	—	——	—	P-18344	#36	P-17993	—	——	#70	P-18213
STUTZ DU-32	1933	EE-3	.058″	P-17004	—	——	—	P-16965	#36	P-17015	—	——	#62	P-17454

TILLOTSON CARBURETORS

D-1A—WILLYS FOUR, MODEL 77 (1933).
D-2A—WILLYS SIX, MODEL 99 (1933).

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and economizer (metering rod and metering jet assembly). Fuel for main nozzle (located above a plug at the side of the barrel) is metered by a metering pin and jet assembly at the bottom of the accelerating pump. Metering pin is pressed down by accelerating pump piston, permitting an increased fuel flow for high speed or wide open throttle operation. Main nozzle is air bled by a vent tube and hole in the carburetor body casting. Fuel for idling is taken from the main nozzle well up through the idle channel riser and is metered by restrictions at the bottom and top of the channel. The idle passage at the top of the idle channel is air bled by a vent in the carburetor barrel below the choke valve. This vent is controlled by the idle adjustment screw. Fuel mixture is taken down through a passage in the body casting and discharged through two ports opposite the throttle edge (closed throttle position). Idle adjustment is the only point requiring attention.

IDLE ADUSTMENT:—Make a preliminary adjustment of the idle adjusting screw by turning screw in or clockwise until it is seated, then turn screw out or counter-clockwise exactly 1¼ turns. Run engine until it is thoroughly warmed up, close throttle, adjust throttle lever stop screw so that engine runs at correct idling speed. Turn idle adjusting screw out or counter-clockwise until engine begins to miss (mixture too lean), then turn screw in slowly until engine fires smoothly. Idle screw operates on air and should be turned out for leaner mixture and in for richer mixture. Check idling speed and readjust throttle stop screw if necessary. Correct idling speed should be 7 M.P.H.



ACCELERATING PUMP:—Accelerating pump cylinder is supplied with fuel from main fuel channel under float bowl and discharges through metering jet to main nozzle when throttle is opened. A check valve in the bottom of the float chamber prevents fuel being discharged back into the float bowl. Accelerating pump should not require adjustment.

ECONOMIZER:—Metering pin in metering jet is pressed up by a spring below the pin for partial throttle operation so that the larger diameter section of the pin restricts the fuel flow through the jet. The upper end of the metering pin stem is engaged in a hole in the accelerating pump plunger so that the metering pin is pressed down when the throttle is opened, the smaller diameter section of the metering pin then permitting a larger fuel flow through the metering jet. Metering pin and jet assembly is not adjustable and should not require attention.

FLOAT LEVEL:—To check float level, take off float bowl cover (upper casting), invert cover, measure distance from gasket face to bottom of float (bottom when not inverted). This distance should be ——". Float level can be corrected by bending float lever. See that float lever stop permits full travel of float.

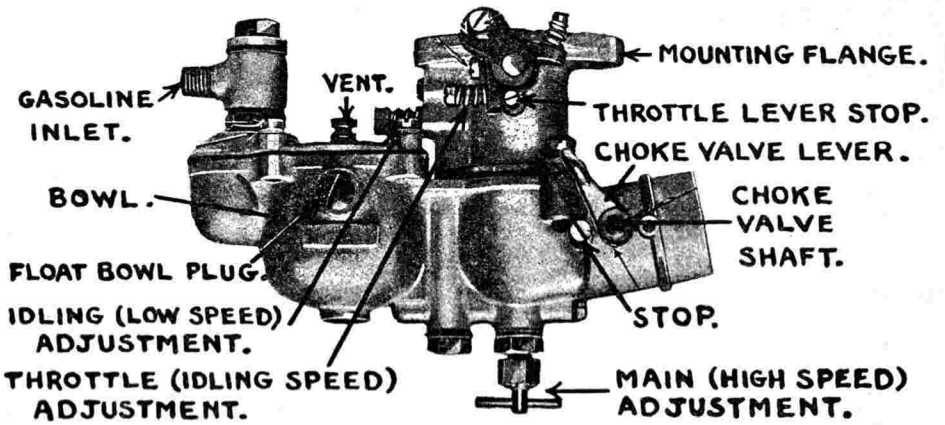
CHOKE:—Choke valve is fitted with relief poppet valve to prevent over-choking. Check choke linkage to see that choke valve is fully closed when choke control button on dash is pulled all the way out and wide open when choke control button is pushed in.

M-10A—AUSTIN BANTAM MODEL (1931-32-33).

TYPE:—Plain tube updraft type. Carburetor has two adjustments. The main or high speed needle valve controls the fuel for the main nozzle. The idle or low speed adjustment screw controls the fuel mixture for the idle discharge ports in the wall of the mixing chamber opposite the throttle edge. Adjustments should be made in the order given below.

PRELIMINARY ADJUSTMENT:—Turn main or high speed adjustment needle valve in or clockwise until it is seated, then open or back off needle valve exactly 1½ turns. Turn idling or low speed adjusting screw in or clockwise until it is seated, then back off adjusting screw ½ turn. Start engine and run until it is thoroughly warmed up.

MAIN (HIGH SPEED) ADJUSTMENT:—With engine warm and running, open throttle until engine speed is approximately 30 M.P.H. Turn main adjusting needle valve in or clockwise until engine begins to slow down for want of fuel. Then slowly turn adjusting handle out or counter-clockwise until engine runs smoothly. The correct setting should be approximately ⅛-¼ turn from the first position. This adjustment should be made slowly and needle valve should not be opened beyond the point where smooth running and power is secured in order to assure maximum economy.



IDLING (LOW SPEED) ADJUSTMENT:—With engine running, close throttle and adjust throttle lever stop screw so that idling speed is somewhat faster than normal. Turn idling adjustment screw in or clockwise until engine begins to miss, then turn screw slowly out or counter-clockwise until engine fires smoothly. Adjusting screw controls fuel mixture and should be turned in for leaner mixture and out for richer mixture. After completing adjustment, adjust throttle lever stop screw to secure correct idling speed.

CHOKE CONTROL:—Choke valve is held in place on choke valve shaft by a spring which allows choke valve to open slightly when engine begins to fire, preventing over-choking. Adjust choke linkage so that choke valve is closed (engine not running) when choke control button on instrument panel is pulled all the way out and wide open with control button pushed in.

TILLOTSON CARBURETORS

J- —DE VAUX, MODEL 6-80 (1932).
J- —DE VAUX, MODEL 6-75 (1931).
J- —DURANT FOUR, MODEL 6-10 (1931).
J-5B—DURANT, MODEL 6-19(1931).
J-5B—DURANT, MODELS 6-21, 6-22 (1932).
J-4A—FRONTENAC, MODEL 6-70 (1932).
J-7A—FRONTENAC, MODEL 6-85 (1932).
J-1A—WILLYS SIX, MODELS 97, 98-D (1931).
J-1B—WILLYS SIX, MODEL 6-90 (1932).
WILLYS SIX, STREAMLINE MODEL 6-90A (1932-33).
J-3B—WILLYS KNIGHT, MODEL 95 (1931).

TYPE:—Plain tube updraft type with throttle operated accelerating pump and power jet. Fuel for main discharge nozzle (mounted at an angle in the venturi) is metered by the main adjustment needle valve on the bottom of the carburetor. Main nozzle is air bled through an external air vent in the carburetor wall. Fuel for idling is taken from the main discharge nozzle well up through the idling tube (low speed jet) and is discharged through two ports in the mixing chamber opposite the throttle edge. Upper or idling discharge port is located above the throttle (closed position), while lower or low speed port is located under the throttle edge. Idling discharge passage is air bled through an air vent controlled by the idling adjustment screw. Idling adjustment screw and main adjustment needle are the only points requiring attention. Adjustment should be made in the order given below.

For idling with closed throttle, all fuel is supplied by the upper (idling) discharge port. At car speeds up to 10 M.P.H. fuel is supplied by both the idling and low speed discharge ports (upper and lower ports). At car speeds from 10-18 M.P.H. fuel is supplied by these ports and by the main discharge nozzle. For car speeds from about 18 M.P.H. up to approximately ¾ throttle, all fuel is supplied by main nozzle. With wide open throttle the main nozzle discharge is supplemented by the power jet outlet located in the side of the venturi.

PRELIMINARY ADJUSTMENT:—Turn main adjustment needle valve (high speed adjustment) up or clockwise until it is seated, then turn back or counter-clockwise exactly 2½ complete turns. Turn idling screw in or clockwise until it is seated, then turn screw out or counter-clockwise ¾ turn. Start engine and run until thoroughly warmed up.

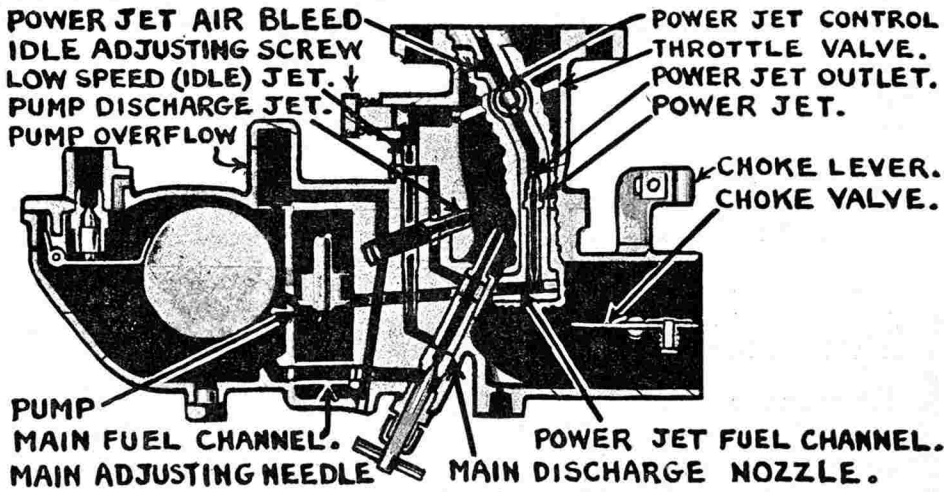
HIGH SPEED ADJUSTMENT:—Open throttle until engine speed is approximately 30 M.P.H., see that spark control is advanced. Turn main adjustment needle up or clockwise until engine begins to slow down for want of fuel, then turn needle slowly down (counter-clockwise) until engine picks up speed and runs smoothly. This adjustment must be made slowly so that needle will not be turned beyond point where smooth running is secured in order to assure maximum economy.

IDLING ADJUSTMENT:—Close throttle, retard spark, adjust throttle lever stop screw so that idling speed is slightly faster than normal. Turn idling adjustment screw out or counter-clockwise until engine begins to miss (mixture too lean), then turn screw slowly in or clockwise until engine fires smoothly. Set throttle stop screw for correct idling speed of approximately 5 M.P.H. Open throttle momentarily, close throttle and check idling adjustment.

ACCELERATING PUMP:—Accelerating pump is operated by the throtle lever and discharges fuel through a pump discharge nozzle in the wall of the venturi when the throttle is opened. Pump discharge is metered by the nozzle and excess fuel delivered by the pump flows into an overflow chamber at the top of the float bowl, from which it is returned to the float chamber. Pump should not require adjustment.

POWER JET:—Fuel for the power jet is taken from the float bowl and is metered by the power jet located in the fuel channel riser. The power jet discharge port is located in the venturi wall directly above the power jet. Power jet riser passage has an air bleed or vent hole controlled by the throttle shaft (a hole drilled through the throttle shaft acts as a valve in the air passage). With throttle less than ¾ open, the power jet discharge port is air vented so that no fuel is discharged through the power jet. With throttle from ¾ to wide open, the hole in the throttle shaft is turned so that the air vent is shut off and additional fuel is discharged through the power jet discharge port. Power jet is not adjustable.

FLOAT LEVEL:—To check float level, take off float bowl cover (upper casting), invert cover, measure distance from face of gasket to bottom of float (bottom when not inverted). This distance should be 1 13/16". To set float level bend float lever. See that float travel is 5/16" and bend float lever stop so that float is free to move this distance.



CHOKE:—Choke valve is fitted with relief poppet valve to prevent over-choking. Adjust choke linkage so that choke valve is fully closed with choke control button on instrument panel pulled all the way out, and wide open with choke button pushed in.

W-3B—WILLYS KNIGHT, MODEL 87 (1931).
W-5D—WILLYS EIGHT, MODEL 8-80D (1931).
WILLYS EIGHT, MODEL 8-88 (1932).
WILLYS EIGHT, STREAM LINE MODEL 8-88A (1932-33).

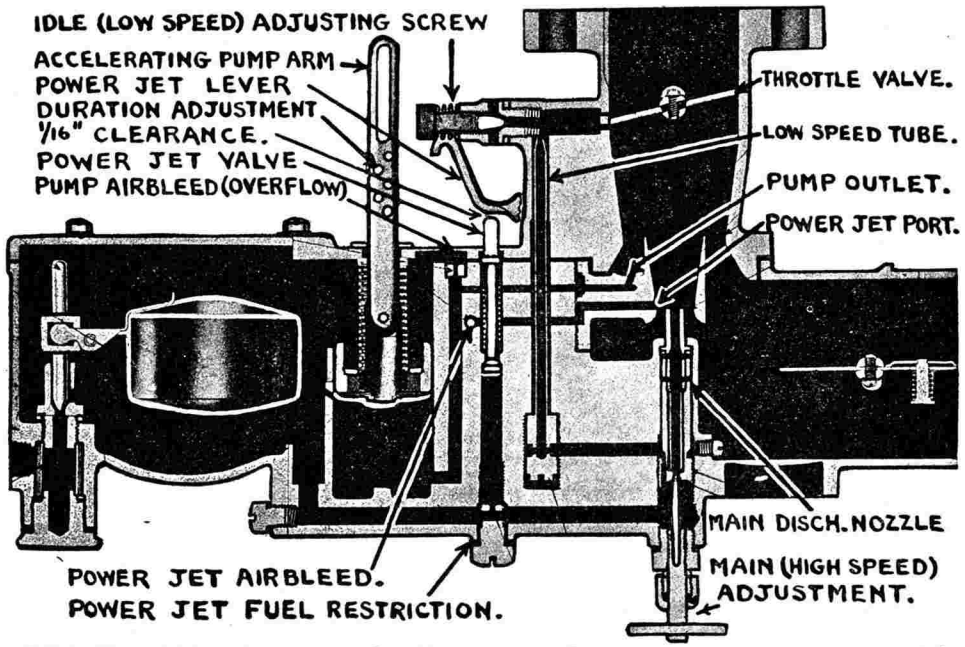
TYPE:—Plain tube updraft type with throttle operated accelerating pump and power jet. All fuel for main discharge nozzle in small venturi is metered by main nozzle restriction and main adjusting screw located at bottom of carburetor. Main nozzle is air bled by an air passage with three air vents. These air vents are located in the throat of the main or large venturi, in the mixing chamber below the venturi, and in the carburetor wall (outside vent hole through a plug). Idling fuel is taken through a by-pass hole in the lower end of the main nozzle to the low speed tube or by-pass and is discharged through two ports in the carburetor wall opposite the throttle edge (closed throttle position). The idling passage at the upper end of the low speed tube is air vented and this air vent is controlled by the idling adjusting screw. The idling screw adjustment and the main adjusting needle position (high speed adjustment) are the only points requiring attention. Adjustments should be made in the order given below.

PRELIMINARY ADJUSTMENT:—Before starting the engine, close the main adjusting needle (under carburetor) by turning to the right or clockwise until it is seated, then back off or open needle by turning to the left or counter-clockwise exactly 2½ full turns. Close idling adjustment screw by turning to the right or clockwise until it is seated, then open by turning screw to the left or counter-clockwise exactly ¾ turn. Start engine and run until it is thoroughly warmed up.

TILLOTSON CARBURETORS

HIGH SPEED ADJUSTMENT:—Retard spark, open throttle until engine speed is equivalent to 25 M.P.H. Turn the main adjusting needle up or clockwise until engine begins to slow down. Then turn needle down or counter-clockwise until speed picks up and engine runs smoothly (this should not be more than ⅛-¼ turn from first position. This adjustment must be made slowly and the needle should not be turned beyond the point where good power and free running is secured in order to assure maximum economy.

IDLING ADJUSTMENT:—After completing high speed adjustment, close throttle, adjust throttle stop screw so that idling speed is somewhat fast. Turn idling adjustment screw to left or out until engine begins to miss (mixture too lean), then turn screw slowly in or clockwise until engine fires smoothly. Adjust throttle stop screw for correct idling speed. Open throttle and speed up engine, close throttle, recheck idling adjustment.



ACCELERATING PUMP:—Accelerating pump plunger and piston is operated by the throttle lever and discharges fuel through a discharge hole in the small venturi support arm when the throttle is opened. Pump discharge riser passage is connected to the float chamber at its upper end and excess fuel delivered by the pump flows through the air bleed restriction (at the top of the passage) back to the float chamber. This vent also serves as an air bleed for the discharge port when the pump is not operating. Accelerating pump should not require adjustment. Pump plunger link is provided with a series of holes (duration adjustment) on some types or the connector link has an adjustable stop screw.

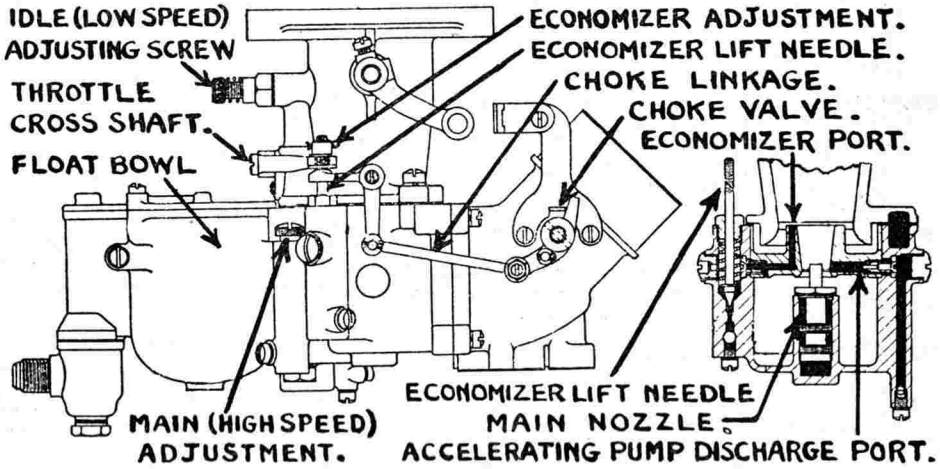
POWER JET:—Clearance between face of operating lever and power jet valve plunger should be 1/16" with throttle closed and choke valve wide open. The operating lever is connected to the choke valve so that the power jet valve is open with the choke valve closed (at all positions of choke valve except when wide open). This assists in starting and warming up the engine. Power jet valve is also opened by the throttle lever when throttle is wide open, permitting an extra fuel discharge for full power operation. Fuel for the power jet is taken from the main fuel channel through a metering restriction and up through the power jet valve to a discharge port in the throat of the small venturi. The discharge passage is air bled to control the fuel discharge through the power jet. Power jet is not adjustable except for clearance between operating valve plunger and operating lever (above).

FLOAT LEVEL:—Gasoline level in float bowl should be ¾" below top edge of bowl. To check level, take off bowl cover, remove gasket, measure fuel level from top edge of bowl. Float level can only be changed by changing position of the spool on the needle valve stem. Float lever should not be bent.

CHOKE:—Choke valve is connected to power jet valve operating lever so that power jet valve is opened when choke valve is closed (see Power Jet for adjustment of linkage). Choke valve is fitted with a relief poppet valve to prevent over-choking. Check choke control linkage to see that choke valve is fully closed with choke control button on instrument panel pulled out and wide open with button pushed in.

V-5B—WILLYS KNIGHT MODEL 66-D (1931-32). WILLYS KNIGHT STREAM LINE MODEL 66-E (1932-33).

TYPE:—Plain tube updraft type with throttle operated accelerating pump and economizer (power jet). All fuel for main discharge nozzle is metered by high speed adjusting needle (located on top of carburetor at left of economizer valve plunger or lift needle). Main nozzle is air bled by an air passage with three air vents. Air vents are located in the mixing chamber below the large venturi, in the large venturi slightly above the venturi throat, and in the carburetor wall (external air vent). Fuel for idling is taken from the lower end of the main nozzle through a cross passage to the low speed or by-pass tube and is discharged through two ports in the carburetor wall opposite the throttle edge (closed throttle position). Uppper idling discharge port is above the throttle edge while the lower port is practically closed by the throttle edge with the throttle closed tight. Idling passage at the upper end of the low speed tube is air bled and this air vent is controlled by the idling adjustment screw. Idling screw adjustment and high speed adjustment are the only points requiring attention. Adjustments should be made in the order given below.



PRELIMINARY ADJUSTMENT:—Turn high speed adjusting needle down or clockwise until it is seated, then open needle by turning to left or counter-wise exactly 2¾ full turns. Turn idling adjustment screw in or clockwise until it is seated, then back off screw by turning to left or counter-clockwise exactly ¾ turn. Start engine and run until thoroughly warmed up.

HIGH SPEED ADJUSTMENT:—Retard spark, open throttle until engine speed is equivalent to 25 M.P.H. Turn the main adjusting needle down (clockwise) until engine begins to slow down for want of fuel, then turn needle slowly back (counter-clockwise) until engine picks up speed and runs smoothly. This adjustment must be made slowly and needle should not be turned beyond the point where good power and free running is secured in order to assure maximum economy.

IDLING ADJUSTMENT:—Close throttle, adjust throttle stop screw so that idling speed is faster than normal. Turn idling adjustment screw to left or out until engine begins to miss (mixture too lean), then turn screw to right

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or in until engine fires smoothly. Adjust throttle stop screw for correct idling speed (8 M.P.H.).

ACCELERATING PUMP:—Accelerating pump piston is operated by the throttle lever and discharges fuel through a discharge port in the throat of the small venturi when the throttle is opened. Pump discharge is metered by acceleration well nozzle and excess fuel delivered by pump flows into an expansion chamber in the carbruetor body directly above the nozzle. Pump should not require adjustment.

ECONOMIZER (POWER JET:—Economizer lift needle (shut-off valve stem) is connected to choke valve and throttle valve so that valve is opened when carburetor is choked (to assist in starting and warming up engine) and also when throttle is wide open (providing extra fuel for full power operation). Fuel for power jet is taken from main fuel channel and is metered by economizer fuel restriction below the economizer valve. Economizer passage (above the valve) has an external air vent or air bleed to control fuel discharge through the discharge port in the top edge of the small venturi.

Adjustment:—Clearance between throttle operated cross lever and adjusting nut must be .040″ with throttle closed and choke valve wide open. To adjust, close throttle, see that choke is wide open and that economizer lift needle is seated, turn adjustment nut on upper end of lift needle to right or left until clearance between lower face of adjusting nut and upper surface of throttle operated cross lever is .030-.040″.

FLOAT LEVEL:—Gasoline level in float bowl should be 15/16″ below top edge of float bowl. To check level, take off bowl cover, remove gasket, measure fuel level from top edge of bowl. Float level can only be changed by shifting position of spool on needle valve stem. Do not bend the float lever.

CHOKE:—Choke valve is interconnected with economizer lift needle (power jet shut-off valve) so that valve is opened when carburetor is choked. There must be suficient play in the connecting levers so that lift needle is seated when choke valve is wide open. Adjust choke valve linkage so that choke valve is fully closed when choke control button on instrument panel is pulled out, and wide open when choke button is pushed in.

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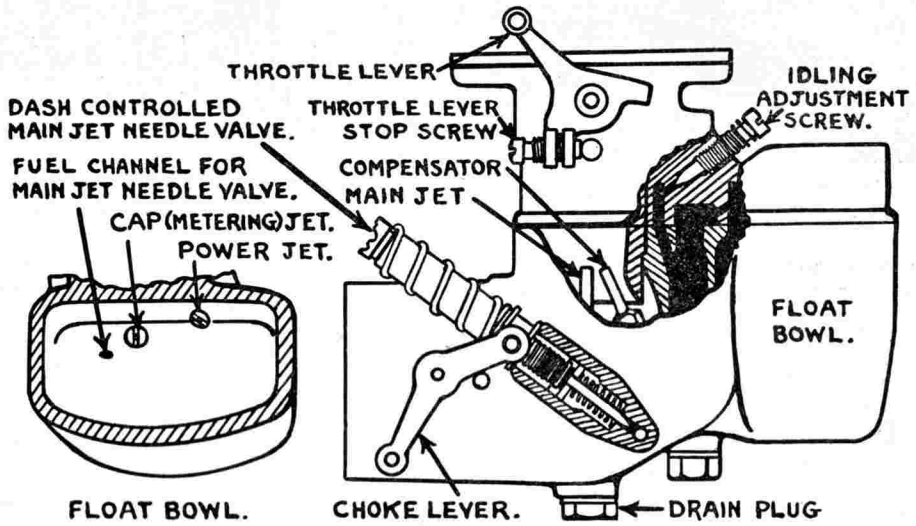
FORD FOUR CYLINDER MODEL B (1932-33).

TYPE:—Plain tube updraft type with main jet and compensating jets located in venturi and new type power jet. Power jet controlled by throttle is principal change from carburetor design used on Model A (second type with single venturi). All jets are fixed and not adjustable except dash-controlled main jet adjusting valve. All fuel for main, compensating and idling jets passes through a cap jet located in the bottom of the float chamber. The main jet adjusting valve is located in a channel which by-passes fuel past the cap jet, providing additional fuel for starting. The compensating jet is located in a well connected to the idling well and has several holes drilled through the lower end of the jet quill. This acts as an air bleed when the fuel level in the idling well drops below this point. The idling jet is located in a chamber which is air vented. The idle port is directly under the throttle edge (closed throttle position) and the throttle valve is notched at this point. The idling adjusting screw controls the air vent at the top of the idling well in which the idling jet quill projects. This idling adjustment is the only point requiring attention.

IDLE ADJUSTMENT:—With engine thoroughly warmed up, close throttle (push throttle button in) and adjust throttle plate stop screw so that engine idles fast enough to prevent stalling. Adjust idling air adjustment screw until engine fires smoothly without rolling or missing. Adjusting screw operates on air and should be turned in to secure richer mixture and out to lean mixture. Correct setting is 1¼-1¾ turns open. Readjust throttle plate stop screw if necessary to secure correct idling speed. If correct idling adjustment cannot be secured, disassemble carburetor and clean idling jet and cap jet (in float chamber) with compressed air. If idling and low speed performance are unsatisfactory, remove and clean compensating jet.

POWER JET:—Power jet consists of a power jet tube (assembled in upper carburetor body) extending down into a well in the lower casting. Fuel flowing into this well is metered by the power jet located in the side of the float chamber. The upper end of the power jet tube terminates in a port in the carburetor wall directly above the venturi. The tube is air vented past a flat portion of the throttle shaft through a hole in the throttle shaft boss on the carburetor casting. At all points up to 2/3 full throttle this air vent is open and air is drawn through the power jet port into the carburetor barrel. From 2/3 throttle opening to full throttle the flat portion of the shaft is turned away from the hole, closing the air vent and causing gasoline to be drawn up and discharged through the power jet port. This provides the additional fuel required for full-throttle operation. The power jet is not adjustable and requires no attention. If engine performance is not satisfactory at full-throttle, disassemble and clean power jet (in float chamber) and power jet tube with compressed air.



MAIN JET ADJUSTING VALVE:—Main jet adjusting valve (dash-controlled) is combined with choke control. Choke control button should be turned to left or counter-clockwise to open main jet adjusting valve and enrich mixture for starting. Correct opening is approximately one full turn and butoton should be turned to right to close valve as soon as engine warms up. This is an operating adjustment and does not require servicing.

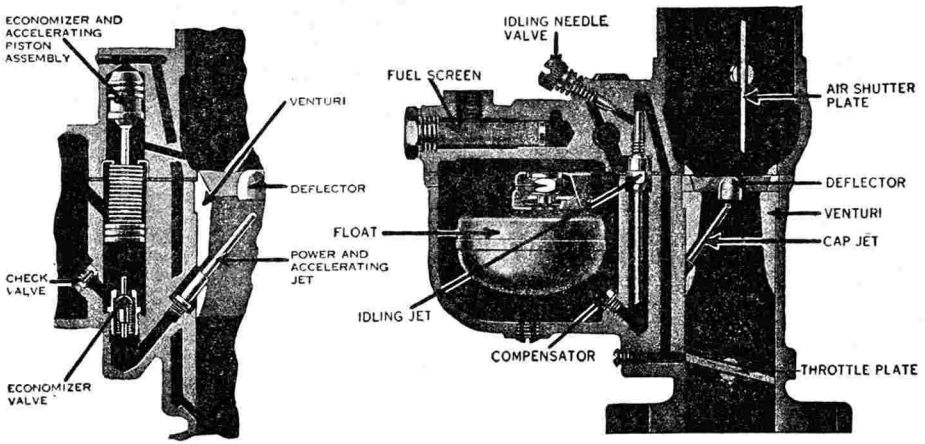
CHOKE:—Choke valve is operated by pulling out choke control button on dash. Choke valve is spring controlled and will open as soon as the control button is released.

ZENITH CARBURETORS

MODELS IN154½X, IN155, IN156B, IN157.
REO FLYING CLOUD SIX, MODEL S-1 (1932).

TYPE:—Plain tube downdraft type with vacuum controlled accelerating pump and economizer. Discharge jets are located in venturi directly under a cone shaped deflector and fuel is discharged against the concave lower surface of the deflector and is then carried into the air stream. Main jet is fed directly from the float bowl. Idle jet located in idle well is fed by fuel flowing through compensator jet. Fuel for idling is metered by idling jet. The idle passage at the top of the idle jet is air bled by a vent leading to the float chamber and this vent is controlled by the idling adjustment screw. From this idle passage the fuel mixture is taken down through a passage in the carburetor body and discharged opposite the throttle edge. The idle operates only with closed throttle or at low speeds and the fuel from the idle well is discharged through the cap jet in the mixing chamber with the throttle open. Idle adjustment is the only point requiring attention.

IDLING ADJUSTMENT:—Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, turn idling adjustment out or counter-clockwise until engine begins to miss or is rough (mixture too lean), then turn screw slowly in or clockwise until engine fires smoothly. Adjusting screw controls air and should be turned out for leaner mixture and in for richer mixture. Adjust throttle lever stop screw for correct idling speed. Recheck idling adjustment. Correct setting should be between 1-3 turns open. If carburetor is entirely out of adjustment a preliminary setting may be made by turning idling screw in until it is seated and then backing screw off 1½ turns. This will allow engine to be warmed up.



ACCELERATING PUMP AND ECONOMIZER:—Accelerating pump and economizer are controlled by vacuum piston. The chamber above the vacuum piston is connected to the carburetor barrel below the throttle so that the vacuum in the manifold will hold the piston up for all partial throttle positions. When the throttle is opened for acceleration the collapse of the vacuum will allow the piston to fall, discharging the fuel in the pump cylinder through the economizer valve to the power and accelerating jet in the mixing chamber. A check valve prevents the fuel flowing back into the float bowl.

Economizer valve at lower end of accelerating pump is spring loaded and prevents fuel being discharged through the power jet when the throttle is closed. When the throttle is opened for acceleration or is held open for full power operation the economizer valve is opened by the piston, allowing fuel to flow to the power jet. Accelerating pump and economizer discharge is metered by the discharge jet. Accelerating pump and economizer are not adjustable and do not require attention.

FLOAT LEVEL:—Fuel level in float bowl is set at 5/8" below the top edge of the bowl. This can be checked by a special gauge, Part No. C-4088, which is designed to be attached to the drain hole at the bottom of the bowl. Float level should not require adjustment. Float hinge must not be bent.

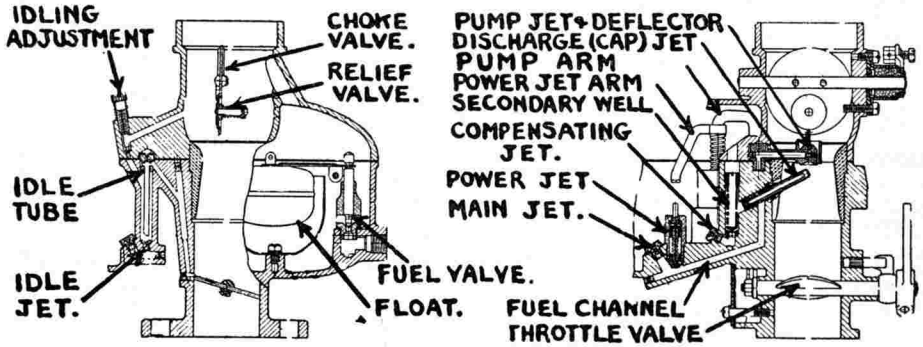
CHOKE CONTROL:—Choke valve is offset and is held in position with relation to choke valve lever by a spring. The spring allows the choke valve to open slightly when engine begins to fire, preventing over-choking and assisting in warming up. Adjust choke linkage so that choke valve is fully closed when choke control button is pulled all the way out (engine not running) and wide open with choke control button pushed in.

MODELS IN175, IN175½.

REO FLYING CLOUD, MODEL S-1 (1932).

TYPE:—Plain tube updraft type with throttle operated accelerating pump and power jet. Discharge jets (cap jet) are located in venturi directly under a cone shaped deflector and fuel is discharged against the concave lower face of the deflector. Main jet is located in float bowl. On some models a main jet adjusting needle valve by-passes some fuel past the main jet. Compensating jet (in float bowl) meters fuel flowing to secondary well and idling tube. Secondary well is air vented at the top. Fuel for idling is taken up through the idling tube located in the idling well and is discharged through ports opposite the throttle edge. The idling well is air bled by a vent in the upper part of the carburetor barrel (below the choke valve) and this vent is controlled by the idling adjustment screw. This idling adjustment is the only point requiring attention.

IDLE ADJUSTMENT:—Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, close throttle, turn idling adjustment screw out or counter-clockwise until engine begins to miss or is rough, then turn screw slowly in or clockwise until engine fires smoothly. Adjusting screw controls air and should be turned in for richer mixture and out for leaner mixture. After completing adjustment, check idling speed and adjust throttle lever stop screw for correct idling speed.



POWER JET:—Power jet consists of a shut-off valve in the float chamber which is opened by an arm on the accelerating pump rod when the throttle is wide open. This permits fuel to be by-passed through the valve past the main jet for full power operation. This fuel is metered by the restriction in the lower end of the power jet assembly. Power jet should not require attention.

ACCELERATING PUMP:—Accelerating pump is operated by the throttle lever. Fuel is drawn into the pump cylinder through a ball-check valve from the float bowl when the throttle is opened and is discharged through another ball-check valve to the discharge port in the deflector assembly in the venturi. Pump discharge is metered by the discharge opening in the deflector. Pump should not require attention.

FLOAT LEVEL:—Fuel level in float bowl should be 45/64" below the top edge of the float bowl when tested with a 6' head on the intake. This is equivalent to 1½ pounds pressure.

CHOKE CONTROL:—Choke valve is fitted with a relief poppet valve to prevent over-choking and to assist in warming up. See that choke linkage is adjusted so that choke valve is closed with choke control button on instrument pulled all the way out and wide open with control button pushed in.

ZENITH CARBURETORS

105-DC—STUTZ SIX, MODEL LA (1931).
STUTZ SIX, MODEL LAA (1932-33).
STUTZ EIGHT, MODEL SV-16 (1931-32-33).

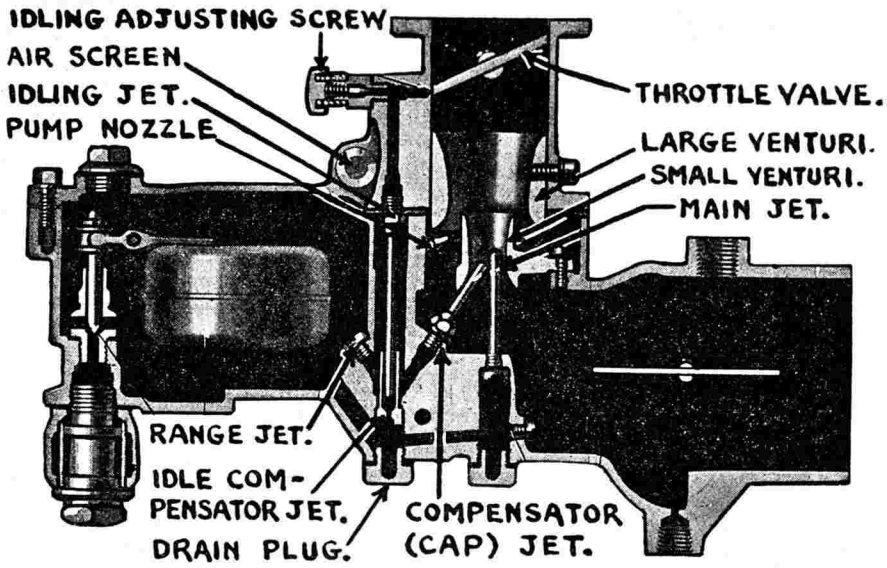
TYPE:—Dual barrel or duplex updraft plain tube type with positively operated accelerating pump connected to throttle lever. Carburetor barrels have independent metering and discharge jet assemblies, idle adjustments, and throttle valves (throttle valves are mounted on the same shaft and will not require synchronization). All jets are fixed or non-adjustable type. Main jet (high speed jet) located in secondary venturi is fed by fuel flowing directly from float chamber through a channel to a well under the jet. Idle jet located in idle well is fed by fuel from main jet channel through the idle compensator jet (forming the bottom of the well) and also by the range compensator jet (in float chamber). Cap jet located in secondary venturi is fed from the idling well and will take all fuel from range compensator jet and overflow from idle compensator jet at driving speeds (idle jet discharge is operative only during closed throttle idling and low speed driving). Idle discharge tube (above idling jet) is air bled and the air bleed is controlled by the idling adjustment screw. This is the only point requiring attention.

IDLING ADJUSTMENT:—Engine must be warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle, adjust throttle lever stop screw if necessary to keep engine from stalling. Then adjust each idling screw, turning screw out or counterclockwise until engine begins to miss or speed falls off, and then turning screw in or clockwise until engine fires smoothly. Idle adjustment screws operate on air and must be turned out to secure leaner mixture and in for richer mixture. After each idling screw has been adjusted and engine fires smoothly on all eight cylinders, adjust throttle lever stop screw to secure correct idling speed.

If correct idling adjustment cannot be secured, clean out idle compensator jet (under plug on bottom of carburetor) with compressed air, take out idle adjustment screw assembly and blow out idle port. Idle jet can also be cleaned with compressed air if carburetor is disassembled (jet is screwed in upper carburetor body). If low speed operation is unsatisfactory clean out range compensator jet in float chamber.

PERFORMANCE:—All jets are of the 'fixed' type. Jets should not be changed except to compensate for special fuel or operating conditions, such as high altitude. Manufacturer recommends that jets not be changed unless car is operated permanently at elevations greater than 6000 feet.

ACCELERATING PUMP:—Not adjustable. Accelerating pump discharges fuel into pump discharge chamber when throttle is opened. This fuel feeds the pump discharge jet located below the primary venturi in each carburetor barrel. Discharge jet or nozzle is air vented. Excess fuel discharged into pump discharge chamber when throttle is quickly opened overflows and escapes back into float chamber. Pump discharge chamber will maintain fuel level until fuel is all discharged through pump jet or until throttle is closed when fuel remaining in discharge chamber will be sucked back into the pump cylinder by the pump plunger. Accelerating pump is not adjustable.



FLOAT LEVEL:—Fuel level in float chamber should stand ¾" below top edge of float bowl with engine not running. Float level should not require adjustment. Float level can only be changed by changing position of spool on float needle valve stem and float lever should not be bent.

CHOKE CONTROL:—Choke linkage should be adjusted so that choke valve is fully closed when choke control button on instrument panel is pulled all the way out and wide open when choke control button is pushed all the way in.

AC. FUEL PUMP

SERIES E, O, P

SERIES E

DESCRIPTION:—This fuel pump is of the mechanical, diaphragm type. It differs from previous designs in that the linkage has been simplified and the rocker arm spring relocated (see illustration). An air dome over the outlet valve is used. In servicing (replacing diaphragm), a preliminary assembly must be made with the pullrod out of the pump and the complete assembly then installed (see complete directions below).

OPERATION:—The down stroke of the diaphragm is positively actuated by the rocker arm 'D', which is connected to the pullrod 'F' through the link 'R'. The down stroke of the diaphragm causes a vacuum in the pump chamber and gasoline is drawn through inlet into the sediment chamber, through the filter screen 'L', and the inlet valve 'N' into the pump chamber 'M'. The rocker arm is forced to follow the eccentric driving cam by the rocker arm spring 'S', releasing the pullrod linkage, and the diaphragm is then forced up by the driving spring 'C', forcing the gasoline in the pump chamber through the outlet valve 'O' and the pump outlet to the carburetor. Fuel delivery is controlled by the back pressure of the gasoline in the carburetor float bowl so that when the carburetor float valve closes the back pressure will hold the diaphragm at the bottom of its stroke with the driving spring compressed. The rocker arm continues to move with the rotation of the eccentric cam but this action is absorbed by the pump linkage. Whenever the carburetor float valve reopens, the pumping action is resumed.

TROUBLE SHOOTING:—Trouble shooting and servicing of this type pump is similar to previous types except for replacement of diaphragm. See page on 'Servicing Fuel Pumps', except for diaphragm replacement directions given below.

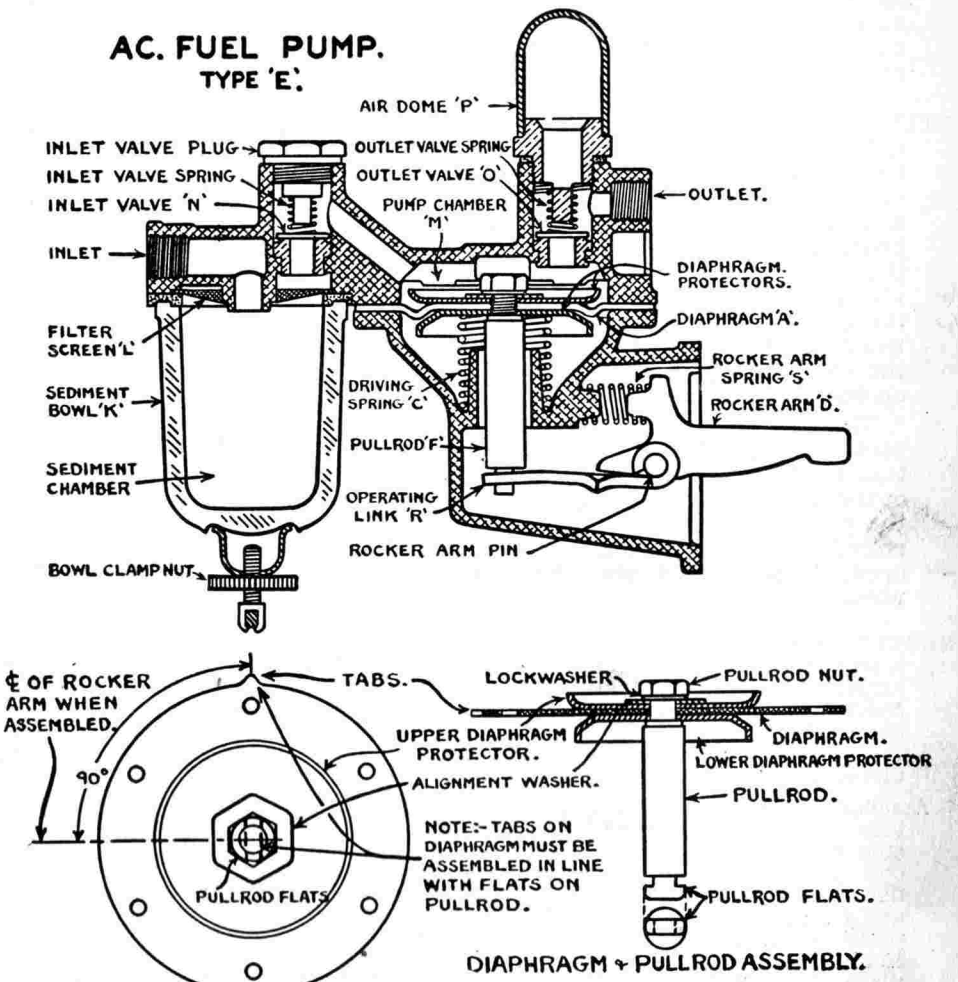
DIAPHRAGM REPLACEMENT:—With pump disassembled (pullrod out of pump body) and old diaphragm removed, clamp pullrod in vise, engaging flatted end of pullrod between vise jaws. Assembled pullrod gasket, lower diaphragm protector (cupped side down), four layers of diaphragm cloth, upper diaphragm protector (cupped side up), alignment washer, lock washer, pullrod nut, on pullrod in order given. Line up tabs on diaphragm and turn diaphragm layers so that tabs are in line with flatted end of pullrod (see illustration). Use special alignment washer wrench (#846291) and keep diaphragm from twisting or turning while pullrod nut is being tightened. Remove complete assembly from vise, clamp pump body in vise, place driving spring in position, insert diaphragm assembly, push down on diaphragm assembly (compressing driving spring), engage flatted end of pullrod in rocker arm link, turn diaphragm assembly 90° to right or left until holes in diaphragm line up with holes in pump body. Place pump cover in position, engage cover screws, flex diaphragm to extreme high position while tightening cover screws. Diaphragm gauge (#846295) used in testing assembly on previous pump designs should not be used on Type E pumps.

Rocker Arm Linkage. Whenever rocker arm or rocker link is removed from pump, make certain that link is replaced with loop upward (see illustration). Rocker arm pin must be secured with retaining rings.

TESTING:—See Fuel Pump Servicing page for details of bench testing and priming action test on fuel pumps. Pump should be tested before being replaced on car.

SERIES O AND P

These types are assembled from parts used on other pump types. For servicing information see data on previous types, as follows:
Series O:—Pump body—Series B. Pump cover—Series E.
Series P:—Pump body—Series E. Pump cover—Series B.



AC FUEL PUMP

SERIES F, I, J COMBINATION FUEL & VACUUM PUMPS

DESCRIPTION:—These types fuel pumps consist of two distinctly separate units, a fuel pump (upper section of the unit) and a vacuum pump (lower section of the unit) which are entirely separate except that the same operating linkage is used for both units. The Fuel Pump is similar in design and operation to the Type E (see separate article for complete data on servicing of fuel pump section).

The Vacuum Pump unit is designed for windshield wiper operation and acts as a booster pump to ensure continuous windshield wiper operation even when the car is operated with wide open throtttle and consequently low manifold vacuum.

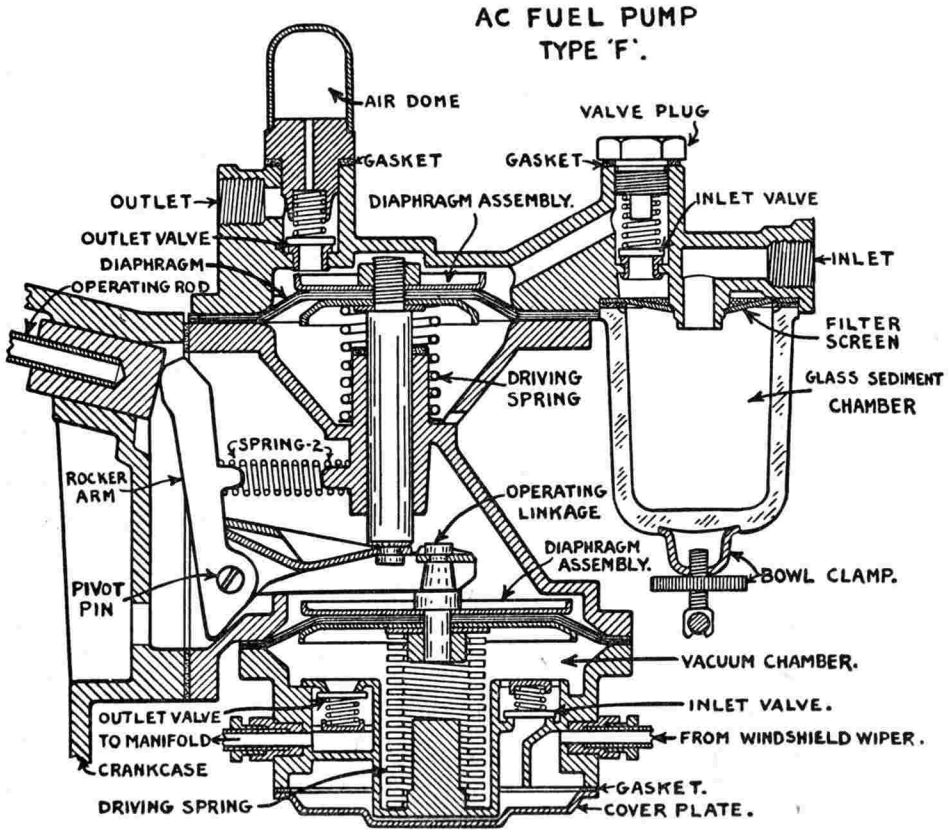
OPERATION OF VACUUM PUMP:—The vacuum pump consists of a vacuum chamber containing the inlet and outlet valves and closed at the upper end by the pump diaphragm. A spring is assembled in the center of the pump under the diaphragm. The operating shaft on the upper surface of the diaphragm assembly is connected to the pump rocker arm through the linkage. In operation when the rocker arm is actuated by the eccentric on the camshaft the vacuum pump diaphragm is forced down, expelling any air in the pump chamber through the outlet valve into the manifold. When the rocker arm moves back (freeing the pump linkage), the driving spring under the diaphragm forces the diaphragm upward creating a vacuum in the chamber, opening the inlet valve and causing the windshield wiper to operate.

Whenever the engine is operated with the windshield wiper turned off the vacuum in the vacuum chamber will hold the diaphragm at its lowest position (with the driving spring compressed) and the vacuum pump will not operate. Whenever the manifold vacuum is higher than the pump vacuum the pump will likewise be inoperative and the windshield wiper will be operated by the manifold vacuum straight through the pump with both valves open. At all other times the pump operates as a booster in operating the windshield wiper.

SERVICING (VACUUM PUMP SECTION):—To replace vacuum pump diaphragm, assemble in order, pull rod gasket, protector washer, five layers of diaphragm cloth, protector washer, alignment washer, lock washer, pull rod nut. Line up holes in diaphragm layers and see that center line of flats on pull rod is exactly midway between adjacent holes on diaphragm. Hold diaphragm alignment washer from turning while pull rod nut is being tightened. Follow directions below for assembly of pump.

Assembly of Vacuum Pump Section. Place fibre inlet valve in position on brass valve seat in body. Place inlet valve spring in position on valve. Place valve stop plate (spider-shaped die-cast piece) on top of valve spring with top coil of spring seated in stop plate. Check assembly of inlet valve by pressing down on inlet valve stop, see that valve spring is properly centered in stop and that legs of stop plate fit in recess in body. Place outlet valve spring in position, see that spring is centered in recess. Place outlet valve on spring. Hold down on inlet valve spring stop plate, slide valve retainer gasket in place, place valve retainer on top of gasket (without releasing inlet valve spring). Mount valve retainer in place, using flat-head screws (tighten center screws first), make certain that valve retainer is correctly installed with countersunk holes facing upward. Invert vacuum pump body, place screen in position, see that screen is flat and fits around shoulders of body screw holes. Assemble bottom cover.

Installing Vacuum Pump Section. Invert fuel pump and mount in a vise on the bench. Install vacuum pump diaphragm assembly, making certain that flatted end of pull rod is engaged in operating link and turned 90° to position for correct engagement. Place diaphragm spring in position on diaphragm. Place assembled vacuum pump unit in position on fuel pump, make certain that diaphragm spring is centered on boss in vacuum pump body. Push in on the pump rocker arm until the diaphragm is flat, wedge a small piece of metal between body and shoulder on rocker arm to hold rocker arm in this position while assembly is being completed. Line up marks on body flanges (these marks should be made before pump is disassembled), press down on pump, install screws and lock washers loosely, threading screws through holes in diaphragm layers. Then remove metal wedge, allowing diaphragm to assume highest position, tighten screws alternately and securely.



TESTING:—The strength of the vacuum pump spring will make it impractical to bench-test the pump before it is installed on the car. In installing the pump, see that the rocker arm is in the innermost position to avoid possibility of distorting the pump mountng flange while mounting nuts are being tightened.

To check vacuum pump operation, note windshield wiper performance while engine is alternately idling and accelerating. Windshield wiper action should be constant. Do not operate the pump with the outlet closed or blocked as the downward stroke is positively driven by the linkage.

TROUBLE SHOOTING:—If vacuum pump performance is not satisfactory as evidenced by faulty windshield wiper action, check as directed in following table:

Windshield Wiper operations slow at high speeds or when accelerating. Indicates that vacuum pump is not operating. Check windshield wiper lines and fittings. If no leaks are found, disassemble vacuum pump and check valves and diaphragm.

Oil Smoke in Engine Exhaust. Indicates punctured diaphragm. To check before disassembling pump, disconnect line between pump and manifold, operate pump, hold a piece of paper over pump outlet. Oil spray in exhaust from pump indicates a punctured diaphragm (if no oil spray noted at this point, oil smoke may indicate defective piston rings, etc.

AC FUEL PUMP

SERIES R AND T

DESCRIPTION:—These pumps are mechanically operated, diaphragm type pumps and are similar in operation to previous pump types. The pump design is not similar to previous designs (see illustration). The sediment chamber (H) is located in the pump body and the external glass sediment bowl is not used. The sediment chamber can be drained by removing the screw (N). The pull rod is assembled as a unit with the diaphragm and diaphragm protectors (upper end of pull rod is riveted) and it is necessary to replace this entire assembly as a unit whenever the diaphragm is found defective.

OPERATION:—As in previous pump designs, the down stroke of the diaphragm is positive, the diaphragm being pulled down by the action of the rocker arm (A), which is connected to the pull rod by the linkage (C). This creates a vacuum in the pump chamber and gasoline is drawn in through inlet (G), sediment chamber (H), filter screen (I), and inlet valve (J) into pump chamber (F). The rocker arm is forced to follow the face of the eccentric cam by the rocker arm spring (M), releasing the pull rod linkage and the diaphragm is then pushed upward by the driving spring (E). This forces the gasoline out through the outlet valve (K) and the pump outlet (L) to the carburetor. Fuel delivery is controlled by the back pressure of the gasoline in the carburetor float bowl so that when the carburetor float valve closes, this back pressure holds the diaphragm at the bottom of its stroke with the driving spring compressed. The rocker arm continues to move with the rotation of the eccentric cam but this motion is absorbed by the linkage. Whenever the carburetor float valve opens, the pumping action is resumed.

TROUBLE SHOOTING:—If fuel pump action is not satisfactory, check in accordance with the following table:

No fuel or insufficient fuel at carburetor.

(1) Gasoline tank empty.

(2) Bent, kinked, leaky tubing or connections. Tighten all pipe connections. Check condition of tubing. Replace if necessary.

(3) Dirty Filter Screen. Take off pump cover, clean filter screen. Examine cover gasket. Replace gasket if necessary, tighten cover screw securely.

(4) Loose Cover Plate (no vacuum). Examine cover plate gasket. Tighten cover plate screw securely.

Fuel Leakage through vent in pump body.

(1) Worn or punctured diaphragm. Replace diaphragm (unit with pull rod).

Fuel Leakage at edge of diaphragm.

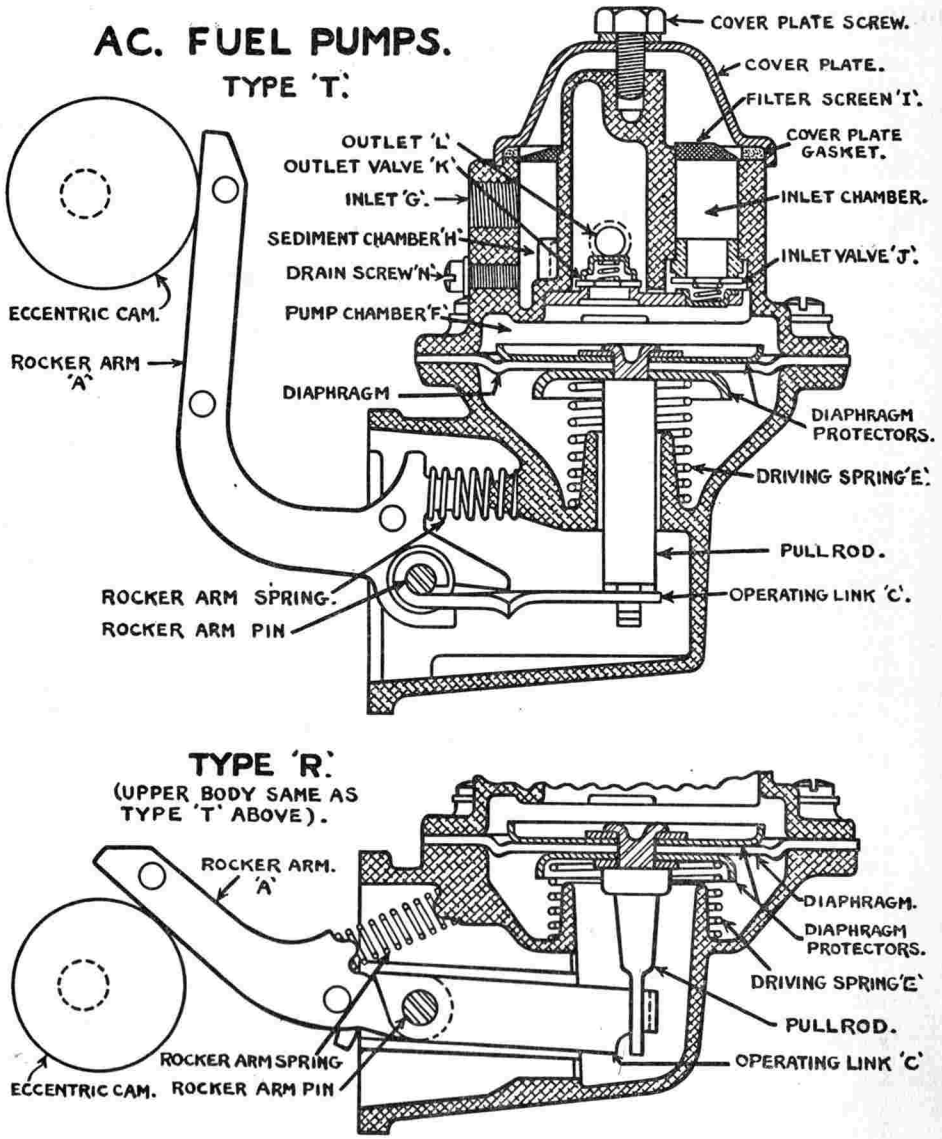
(1) Loose Cover Screws. Tighten cover screws securely (alternately around pump body).

(2) Loose Connections. Check inlet and outlet connections.

Carburetor Flooding.

(1) Carburetor float valve not seating. Check for worn valve, seat or sediment or other obstruction in float bowl. Check float level.

NOTE:—Manufacturer recomemnds that pump not be disassembled further than indicated in table above as special fixtures are necessary for reassembly. See special page in Equipment Section on Fuel Pump Servicing.



CARTER CLIMATIC CONTROL

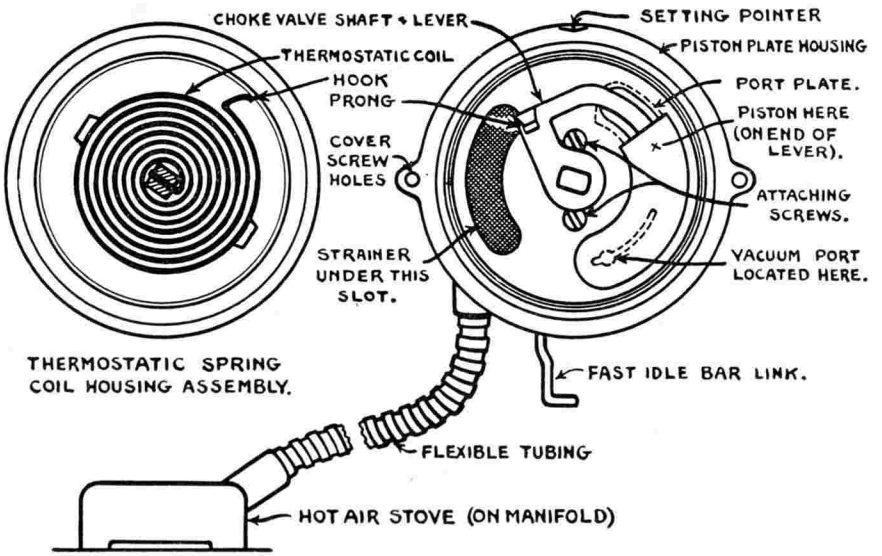
STANDARD EQUIPMENT ON HUDSON LL, LT AND TERRAPLANE K, KU (1934)

DESCRIPTION:—The Carter Climatic Control is an automatic choke designed to choke the carburetor for cold starting and to control the choking action during the warming up period. It employs a combination of engine temperature (hot air from hot air stove on manifold is delivered to control unit case by a flexible connecting tube) and manifold vacuum (vacuum passage in carburetor casting connects port below throttle valve and port in control case) to actuate a thermostatic spring linked to the choke valve shaft lever and a vacuum piston assembly built around the shaft lever (bakalite piston is mounted directly on end of lever). The control is adjusted to close the choke valve completely at 74°F. and the choke valve is opened progressively by the thermostatic spring as the engine warms up. The piston assembly, actuated by manifold vacuum, tends to open the choke when the engine begins to fire and prevents over-choking. A 'fast-idle' control is linked on the choke valve shaft (see below).

DISASSEMBLY AND SERVICING:—To service the control, loosen the lock screw holding the flexible tubing in place in the control case, take out two screws and lock screws in edge of case (cover holding screws), lift off housing assembly containing thermostatic spring (assembly consists of cover, cork insulator, thermostatic coil, and bracket). Do not attempt to remove thermostatic spring or alter its position. Clean out this assembly with air. To disassemble remainder of control unit, remove dust cover on carburetor, remove screw in choke trip lever assembly, taking care that small hand trip lever is not lost, remove two screws holding choke valve in place on choke valve shaft, revolve choke piston lever and shaft assembly until bakalite choke piston on end of lever can be removed, remove piston, pull choke shaft out. Remove two attaching screws holding case on carburetor casting, take out piston plate, port plate, and strainer. Clean these three parts with gasoline, dry with air. Clean remainder of control unit with air, blow out vacuum passage in carburetor (apply air pressure to port in piston plate housing). If the piston plate housing is removed from the air horn of the carburetor, use a new gasket to insure a tight connection at this point. Any air leak will interfere with correct choke action.

Reassembly. In reassembling control unit, see that cork gasket is placed on piston plate housing so that the small hole fits over the raised boss of the vacuum port. Place port plate in grooved recess in piston plate, place strainer in position covering slot in piston plate, assemble on cork gasket and piston plate housing, making certain that slot in piston plate and cork gasket coincide, install two attaching screws. Any misalignment in assembly will interfere with correct choke action. Slide choke valve shaft in until it engages first half of trip lever assembly, place bakalite piston in position in piston plate, line up piston with piston arm, slide choke valve shaft in until it fully engages trip lever. Mount choke valve on shaft, making certain it is perfectly lined up with the air horn bore (see that choke valve does not drag or stick in closed position). When mounting carburetor on engine, see that flexible tubing is entered to full depth of hole and tighten lock screw securely. Any air leak at this point will interfere with correct choke action. Place thermostatic spring housing assembly in position with calibration marking down, install retaining screws and lock washers (do not tighten screws), revolve housing assembly counter-clockwise until spring tension is felt on choke valve, tighten screws with center line of calibration in line with pointer. This is the standard setting.

ADJUSTMENT:—The standard setting with center line of calibration markings opposite pointer is designed to completely close choke valve at 74°F. It will give best results for average fuels. High test fuels have a tendency to run lean and low grade fuels rich during the warming up period. If fuel of either type is used regularly, control setting can be changed for best performance. To make this adjustment, loosen retaining screws, turn housing one mark counter-clockwise for richer setting, or one mark clockwise for leaner setting. Tighten the retaining screws and check performance. Performance must always be tested with a cold engine and ample time (four hours at least) must be allowed between successive adjustments and performance checks for the engine to cool off.



FAST IDLE MECHANISM:—The fast idle consists of a bar or arm linked to the choke valve shaft which drops down behind the throttle valve stop screw when the choke valve is closed. This prevents the throttle valve closing to its normal or 'hot idle' position. The fast idle bar will drop in place only when the throttle is opened and the accelerator pedal must be depressed to place the fast idle in operation. Carburetor adjustments should be made only with the fast idle inoperative (engine warmed up with the bar raised sufficiently so that it does not engage the stop screw).

DELCO-REMY AUTOMATIC CARBURETOR CONTROL

MODELS 498-C, 498-D

STANDARD EQUIPMENT ON BUICK MODELS 34-40, 50, 60, 90 (1934)

DESCRIPTION:—The Automatic Carburetor Control is an automatic choke designed to choke the carburetor for cold starting and to control the choking action under all operating conditions during the warming up period. It employs a combination of engine temperature (thermostatic spring), manifold vacuum (bellows mechanism), and carburetor inlet air velocity (accelerating piston) to control the choke action, The choke valve operating lever is linked to one end of a spiral thermostatic spring so that the lever is rotated and the choke valve opened when the spring unwinds as the engine warms up. The collapsible bellows is linked to the other end of the thermostatic spring and the collapse of the bellows, when the engine begins to fire and manifold vacuum is built up, releases the thermostatic spring tension slightly and opens the choke valve to prevent over-choking. The floating piston of the accelerating piston assembly is likewise held down against spring tension by manifold vacuum and is forced up by the spring when the vacuum collapses as the engine is accelerated. This transfers air to the top of the accelerator piston, forcing the piston down, and increasing the choke action momentarily since the piston is linked to the operating lever shaft. The accelerating piston action after the engine warms up, with choke valve open, is negligible.

INSPECTION AND ADJUSTMENT:—If the action of the Automatic Choke is not satisfactory, check the following points in order:

Binding of Parts. Disconnect link connecting carburetor choke valve and operating lever of automatic choke, see that choke valve lever moves freely. Operate automatic choke by hand. Lever should move freely and should return to initial position when released. All moving parts should be clean and free from oil. Do not oil any part of the choke mechanism.

Initial Choke Position. With operating linkage disconnected, hold both choke valve lever and choke operating lever down as far as they will go, check length of control rod or connecting link. The end of the link should rest in the notch in the upper face of the choke operating lever. Adjust by loosening lock nut and turning turnbuckle to increase or decrease length of link. Reassemble linkage. Starting mixture will be too rich if connecting link is too long, or too lean if connecting link is too short.

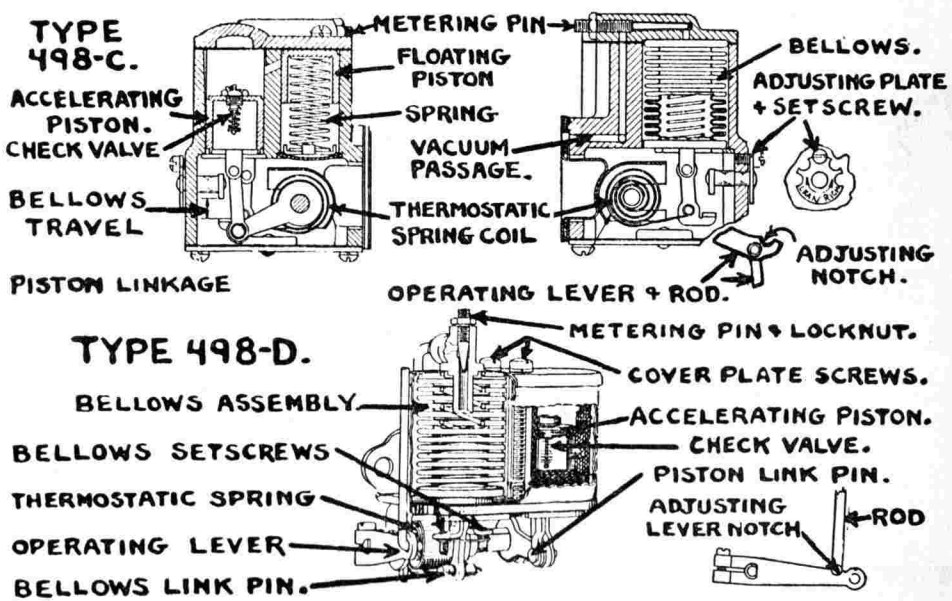
Part Throttle Position (Bellows travel). The time required for the full stroke of the bellows (⅜″ on 498-C, ¼″ on 498-D) is regulated by the metering pin at the top of the unit and should be 12-15 seconds. To adjust, loosen lock nut on metering pin and turn pin in or clockwise to increase 'take-off' time, and out or counter-clockwise to decrease 'take-off' time. The length of the bellows stroke is regulated by the adjusting plate on the side of the case (498-C) or by two set screws in the bellows connecting linkage below the bellows and within the case (498-D). On the 498-C model, the adjusting plate should be turned midway between the 'rich' and 'lean' positions so that the set screw engages the center notch. The bellows end cup should rest against the support plate with the bellows fully extended. If it does not, replace bellows assembly.

TROUBLE SHOOTING:—To disassemble control unit for inspection, disconnect control rod, take off bottom cover, take out link pin in thermostatic spring, being careful not to distort spring or change spring tension, take out piston link pin, disconnect vacuum line, remove top screws. The head and bellows can then be removed (498-C). On the 498-D the cylinders and bellows are removed by rotating the top cover until the bracket at the bottom end of the bellows can be withdrawn through the hole in the support plate. Examine cylinders and pistons. Cylinders should be dry and free from oil or dirt. Do not stretch or compress bellows (see instructions below). Use a new head gasket when reassembling and retime vacuum 'take-off' (bellows stroke timing) as directed above.

Obstructions in Vacuum Passage. Take out metering pin, clean out any dirt in metering pin passage, dry out unit if moisture is found in the bellows.

Bellows or Vacuum Passage Leaking. With metering pin removed, collapse bellows by hand (do not compress bellows solid—bellows stroke is ⅜″ or ¼″), hold a finger tightly over metering pin hole and vacuum passage hole in head, note whether bellows remains collapsed. If bellows extends to original length, bellows or vacuum passage leaks.

Bellows Travel. Check bellows travel. Travel should be ⅜″ on 498-C with adjusting plate set at midpoint between rich and lean, or ¼″ on 498-D (adjusting set screw clearance with bellows fully extended). See that bellows end cup rests against support plate with bellows fully extended. If it does not, bellows should be replaced.



Accelerating Piston Check Valve. Inspect check valve in top of accelerating piston. See that valve opens freely and that face of valve and valve seat are free from dirt or oil. Check valve spring tension by inverting piston. Spring tension should be sufficient to hold valve closed in this position. If valve is removed, be careful not to distort valve seat when replacing in piston (do not tighten excessively). A leaking check valve will cause a lean mixture on acceleration or the 'hop-off' or momentary opening of the choke valve when engine begins to fire will not occur. If check valve sticks or remains closed, the choke valve will not close again after this momentary opening.

SISSON AUTOMATIC CHOKE

STANDARD EQUIPMENT CHRYSLER MODELS CU, CV, DE SOTO MODEL SE (1934)
OPTIONAL EQUIPMENT CHRYSLER MODELS CA, CB, DODGE MODELS DR, DS AND PLYMOUTH MODELS PE, PF, PG (1934)

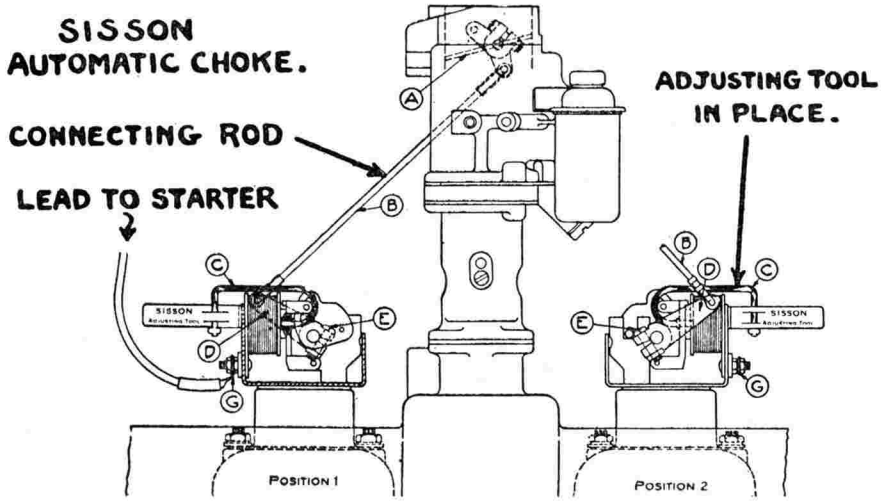
DESCRIPTION:—The Sisson Automatic Choke is designed to correctly choke the carburetor for starting under all conditions of engine temperature and also to control the choke valve during the warming up period. When the engine is started cold, the Automatic Choke fully closes the choke valve until the engine begins to fire, and the valve is then progressively opened by the action of a thermostatic spring as the engine warms up so that the valve is entirely open when the engine reaches the proper operating temperature. When the engine is warm when started, choke valve is not fully closed, the amount of choke being determined by the engine temperature. If engine is hot when started, choke valve in carburetor remains wide open.

INSTALLATION:—The Automatic Choke is mounted in position #1 (see illustration) on Dodge and Plymouth cars, and in position #2 on Chrysler and De Soto. On cars not originally equipped with Autoumatic Choke the manifold mounting pad is provided and provision is made on the carburetor choke valve shaft lever for attachment of the operating lever.

Automatic Choke solenoid terminal is connected to the starter side of the starting switch so that the Choke operates only when the starter is operated to crank the engine. A cut-out switch on the instrument panel is connected in the Choke line so that the swicth can be operated to cut out the choking action and correct flooding of the carburetor whenever this occurs.

OPERATION:—When the starting switch is closed, the Choke solenoid pulls the armature forward. The armature is connected through a lever and rod to the carburetor choke valve lever. If the engine is cold, the choke valve is closed completely. When the engine is warm, the armature strikes the core of the solenoid and the choke valve is held open. When the engine begins to fire and starting switch is released, the solenoid circuit is broken and the position of the choke valve is controlled entirely by the thermostatic spring. The amount of choke supplied during the warming up period depends entirely on the engine temperature and the choke valve is progressively opened as the engine warms up.

ADJUSTMENT:—A special adjusting tool (see illustration) has been devised for use in setting the Automatic Choke. Clamp tool (C) in place so that end of tool lines up two holes in armature and magnet core, locking armature in closed position. Loosen clamp screw (E) until lever (D) turns freely on shaft, then adjust by turning lever on shaft until carburetor choke valve blade is completely closed. Tighten clamp screw (E). Check adjustment by noting backlash in connecting rod (B). If there is no backlash, remove adjusting tool and replace choke case cover.



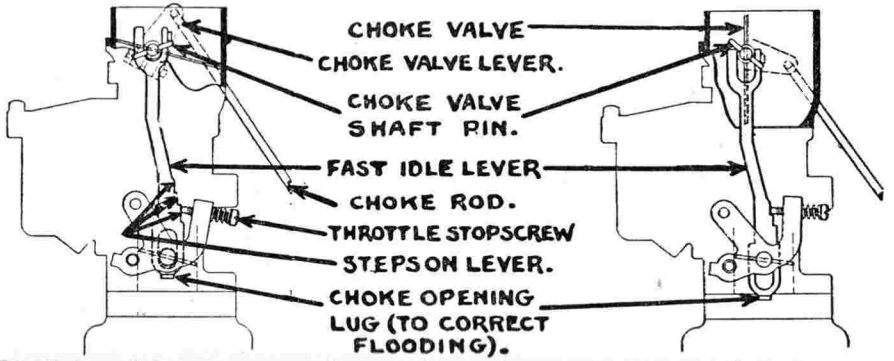
STROMBERG FAST IDLE

LEVER TYPE
STANDARD EQUIPMENT ON AUBURN MODEL 8-50X, OLDSMOBILE L-34

DESCRIPTION:—This type fast idle mechanism consists of a lever or bar linked to the choke valve shaft and having several steps or notches on its lower end which serve as stops for the throttle stop screw which controls idling speed. The pin on the choke valve shaft bears against a lug on the upper end of the lever so that the lever is raised as the choke valve closes. When the choke valve is opened, the lever falls of its own weight, allowing the stop screw to slide off each step in turn until the upper step or 'slow idle' position is reached.

OPERATION:—When this type fast idle is used on carburetors equipped with an automatic choke, the choke valve is closed by the thermostatic spring as the engine cools off until the stop screw engages the first step on the fast idle lever. When the engine is started, the momentary opening of the throttle (throttle must be opened by hand if no hook-up is provided with the starter mechanism), allows the choke valve to snap closed, raising the lever to the fast idle position. As the choke valve is opened, the lever is freed and drops so that the idling speed is increased (by the stop screw sliding from one step to another) until the final or slow idle position is reached.

TO CORRECT FLOODING:—With the throttle wide open, the throttle valve down and opening the choke valve. If the carburetor loads up and engine will not start, the throttle should be opened wide and the engine turned over several times.



STROMBERG AUTOMATIC CHOKE

WITH INTEGRAL FAST IDLE
STANDARD EQUIPMENT ON STUDEBAKER DICTATOR, MODEL A, COMMANDER, MODEL B, LA SALLE MODEL 350, OLDSMOBILE MODEL F-34 (1934)

DESCRIPTION:—This type automatic choke is similar to previous designs in that it employs a thermostatic spring coil (mounted in a case on the exhaust manifold) to close the choke valve, and a vacuum piston (built in the carburetor body casting) to assist in controlling the choke action during the warming up period. The location of the units is different, and in addition a high idle cam is built in the choke mechanism on the carburetor. The fast idle stop screw on the throttle valve lever rests on this cam, and the cam is rotated to this high idle position when the choke valve is closed by the automatic choke. The operation of the vacuum piston when the engine begins to fire opens the choke valve slightly and also rotates the high idle cam so that the stop screw rests on the second step or intermediate idle position. Finally when the choke valve is entirely open, the cam is revolved so that the stop screw drops off to the slow idle or flat portion of the cam and the idling speed is then controlled by the throttle stop screw.

OPERATION:—The thermostatic spring coil on the exhaust manifold or exhaust pipe is linked directly with the choke valve lever through a connecting rod and is designed to close the choke valve completely at a temperature of 70° (engine not running). When the throttle is opened for starting, the high idle cam will be revolved to the high idle position, holding the throttle partly open, providing a high idling speed. When the engine begins to fire, the vacuum piston in the carburetor body will be drawn up (updraft carburetors) or down (downdraft carburetors) so that the choke valve is opened partly and the high idle cam is revolved to the intermediate idle position. As the engine temperature increases, the tension of the thermostatic spring coil decreases, allowing the off-center mounted choke valve to open. At an engine temperature of 120°, the choke valve should be wide open.

ADJUSTMENT:—High Idle Speed. The throttle stop screw should first be adjusted for correct hot or slow idle speed. To make this adjustment, engine must be thoroughly warm so that the choke valve is wide open and high idle cam is revolved to slow idle position so that throttle stop screw is operative. Adjust throttle stop screw so that idling speed is 6 M.P.H. on La Salle, 8 M.P.H. on Studebaker Dictator and Commander, and 6 M.P.H. on Oldsmobile (on Oldsmobile, throttle stop screw and high idle adjusting screw are the same so this is the only adjustment necessary). Then adjust high idle speed as follows:

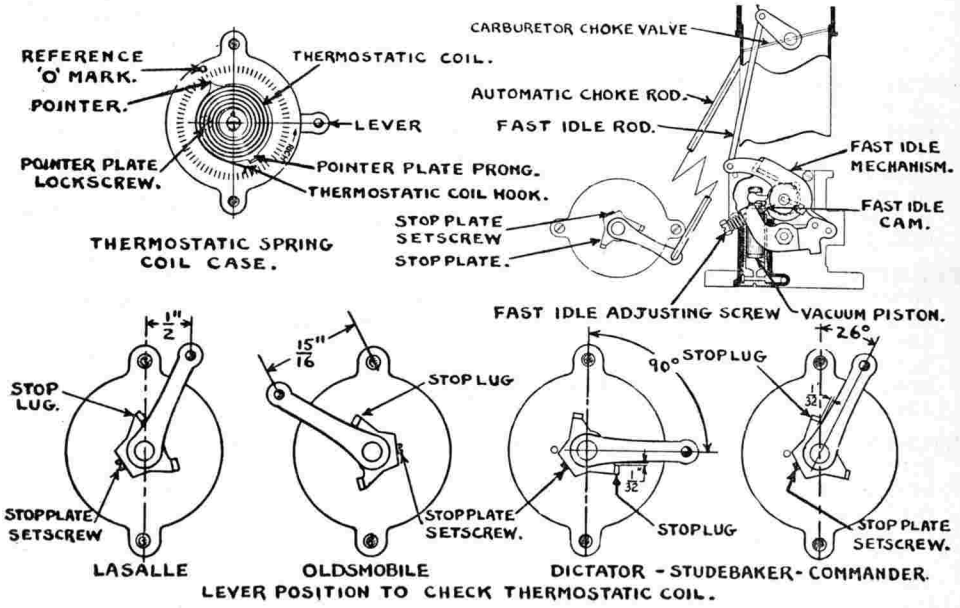
La Salle 350. Turn high idle adjusting screw until is makes contact with the low or small diameter step on the high idle cam, then back off screw about ½ turn until clearance between screw and cam is .010". Use a feeler gauge to check this setting. Choke valve must be open when adjustment is made.

Studebaker Dictator and Commander. Insert a feeler gauge .034" (Dictator) or .060" (Commander) between the low idle screw (throttle stop screw) and the carburetor body. Open throttle, rotate high idle cam so that high idle adjusting screw rests on largest step or high idle portion of cam, close throttle, turn high idle adjusting screw in or out until it has a slight drag on the cam. This adjustment can also be made without using a feeler gauge by first turning the low idle screw (throttle stop screw in one turn (Dictator) or 1⅝ turn (Commander) from the correct or 8 M.P.H. position and then adjusting the high idle screw as directed above. In this case it will be necessary to reset the low idling speed by turning the stop screw out one turn (Dictator), or 1⅝ turns (Commander), after adjustment is completed.

TO CHECK OR ADJUST THERMOSTATIC COIL:—Disconnect operating rod and remove thermostatic coil assembly from position on manifold. Check position of operating lever as follows:

La Salle Model 350. With lever held in closed choke position (lever pointing up and to right of vertical line through mounting screw holes) and against upper lug or stop on thermostat case hub, the distance between the center of the upper mounting screw hole and center of lever connecting hole (outer end of lever) should be ½". To adjust, with lever held in correct position, loosen set screw in hub, rotate hub until lug is against lever, tighten set screw. This is a preliminary adjustment for thermostatic coil testing. After testing, the stop lug should be adjusted so that clearance is not more than 1/32" with choke valve closed.

Studebaker Dictator. Hold lever in closed choke position at right angles (90°) to right of vertical line through mounting screw holes, check clearance between lever and lower lug or stop on thermostat case hub. This clearance must be exactly 1/32". Adjust by loosening set screw in hub and rotating hub. Tighten set screw after making adjustment.



Studebaker Commander. Hold lever in closed choke position. Lever should be 26° to right of vertical line through mounting screw holes and pointing upward. Check clearance between lever and upper stop or lug on thermostat case hub. Adjust by loosening set screw in hub and rotating hub. Tighten set screw.

Oldsmobile F-34. Hold lever in closed choke position. Center of hole in outward end of lever should be 15/16" from center of upper mounting screw hole. Loosen set screw in thermostat case hub, rotate hub until the upper lug or stop on the hub is against the lever, tighten set screw. This is a preliminary setting for testing of thermostatic coil. After testing is completed, adjust hub so that clearance between lever and lug is 1/32" with choke valve closed.

STROMBERG AUTOMATIC CHOKE

Thermostatic Coil Test:—See that thermostat temperature is exactly 70° (allow thermostat to stand until it comes up to room temperature (70°), check temperature with a thermometer placed adjacent to thermostat coil. When temperature is correct, unhook end of thermostat coil from prong on thermostat case, loosen pointer plate lock screw, rotate pointer plate until pointer is directly opposite '0' on scale, check position of thermostat coil hook. Hook should be flush with the prong on the thermostat case. If hook is flush with the prong, thermostat coil tension is correct and thermostat can be reset and replaced on engine (see below).

If the above check indicates that thermostatic coil has taken on a permanent set and that original '0' position is incorrect, this can be corrected by locating a new '0' mark as follows (if coil has been deformed by rough handling, it should be replaced). Loosen pointer plate lock screw, revolve pointer plate until the thermostatic coil hook is flush with the hook on the case. Tighten lock screw, mark case with a new '0' opposite the pointer, obliterate the old '0' mark. This establishes a new reference point and thermostatic coil can then be reset and reinstalled on engine.

Setting Thermostatic Coil:—Correct settings for these car models are as follows:

Car Model	Thermostatic Coil Setting
La Salle 350	12 notches rich
Studebaker Dictator, Model A	3 notches rich
Studebaker Commander, Model B	11 notches rich
Oldsmobile, Model F-34	15 notches rich

To set the thermostatic coil, loosen pointer plate lock screw, revolve pointer plate the correct number of notches rich or lean, tighten lock screw. Install thermostat on manifold, connect choke lever operating rod, with choke lever closed, see that clearance between thermostat lever and stop lug on hub is 1/32" (it will be necessary to set this clearance on La Salle and Oldsmobile—see above).

TYPE H

STANDARD EQUIPMENT ON OLDSMOBILE MODEL L-34 (1934)

DESCRIPTION:—The Stromberg Automatic Choke is designed to completely close the choke valve at a temperature of 70°F. (engine not running) and to open the choke valve progressively as the engine heats up until the valve is wide open at an engine temperature of 120°. It employs both engine temperature (thermostatic spring coil) and manifold vacuum (vacuum piston) to control the choke under all operating conditions. The vacuum piston acts to open the choke a pre-determined amount when the engine begins to fire and prevents over-choking.

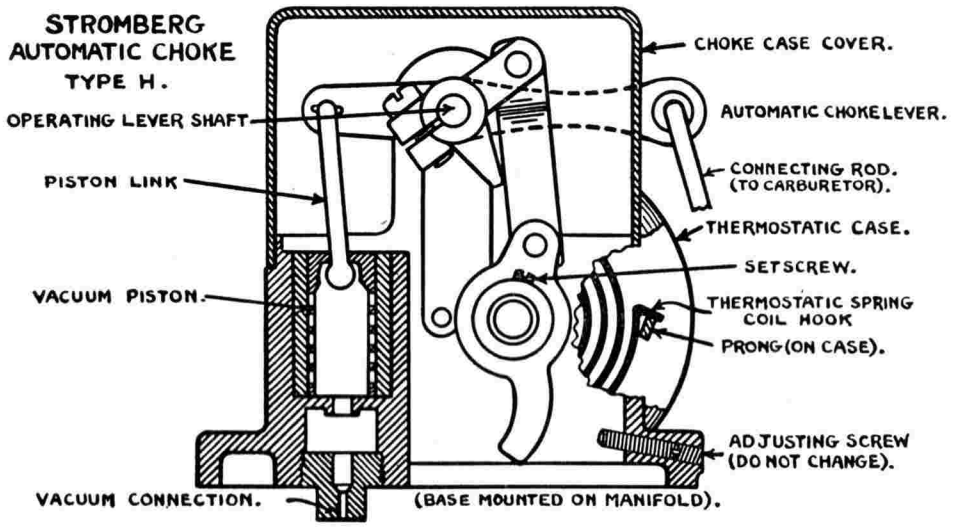
OPERATION:—With the engine cold and not running, the choke valve will be closed (thermostatic spring wound up and vacuum piston up at upper end of stroke). When the engine begins to fire, the manifold vacuum will cause the vacuum piston to move down, opening the choke partly. The choke valve is then controlled by the thermostatic spring and is opened as the engine heats up and the spring unwinds until the engine temperature reaches 120°, when the choke valve will be wide open.

ADJUSTMENT:—Linkage. See that operating linkage moves freely and does not bind. Check connecting rod clearance or backlash with choke valve in closed and wide open positions. With automatic choke lever in uppermost position and choke valve closed, backlash in connecting rod should be not more than .006". Adjust by shifting position of choke valve lever on choke valve shaft.

Thermostatic Spring. Thermostatic spring must be at exactly 70°F. when this check is made. If engine has been running, allow car to stand until it has cooled off to 70°, or if engine temperature is under 70°, allow choke to come up to room temperature before testing. Remove thermostatic spring hook from prong on thermostat case. Revolve thermostat case until '0' mark of calibration is opposite pointer. In this position thermostatic spring hook should be flush with the prong on the case (with thermostat at 70°F.). To adjust, loosen set screw on thermostatic spring shaft lever, revolve thermostatic spring until hook is flush with prong, tighten set screw. After making this adjustment, thermostatic spring must be reset (see below).

Vacuum Piston. If automatic choke is removed from engine manifold, see that gasket between base and manifold is in good condition and tighten attaching screws evenly and firmly. An air leak at this point will interfere with the choke action.

SETTING:—To set automatic choke, revolve the spring case the correct number of divisions on the scale rich or lean as directed for each car model. Correct setting for Oldsmobile L-34 is 3 notches rich.



FAST IDLE ADJUSTMENTS

Instructions for adjustment of Fast Idle mechanisms on 1934 car models are given below. In a number of instances, the Fast Idle mechanism requires no adjustment, or is built in the carburetor as the throttle stop screw stop-plate so Fast Idle adjustment is taken care of in setting the idling speed (throttle stop screw adjustment). See articles on individual carburetor models for idling speed adjustment.

AUBURN:—Model 6-52X, 6-52Y. Throttle and choke valve interconnected so that throttle valve is opened .031-.035" with carburetor fully choked. Should not require adjustment.

Model 8-50X. Throttle valve and choke valve interconnected by 'throttle-cracking' device so that throttle valve is opened slightly when carburetor is choked for starting. See article on URO-2 Carburetors.

Model 8-50Y. Stromberg lever type fast idle mechanism. See separate article on this device. Does not require adjustment.

BUICK:—Models 34-40, 50, 60, 90. All models equipped with fast idle thermostatic spring coil and cam. See separate article on Marvel Cold Idle control for complete checking and adjusting directions.

CHRYSLER:—Model CA, CB Six. Throttle valve and choke interconnected so that throttle is opened to fast idle position with choke valve more than ½ on. No adjustment required.

Models CU, CV Airflow Eights. Model CW Custom Imperial. To adjust, back off throttle stop screw so that throttle valve is completely closed. See that choke valve is completely closed, back off fast idle set screw until it just contacts fast idle counterweight, then turn this screw down exactly two turns, tighten locknut. This will give a fast idle speed of 15 M.P.H. Readjust throttle stop screw for 6 M.P.H. hot or slow idle speed.

DE SOTO:—Model SE. Throttle valve and choke valve interconnected so that throttle is opened to fast idle position with choke valve more than ½ on. No adjustment required.

DODGE:—Model DR, DS. Throttle valve and choke valve interconnected so that throttle is opened slightly with choke valve more than ½ on. With choke valve fully closed, throttle stop screw should rest on the high point of the fast idle cam.

GRAHAM:—Model 68 Six, 69 Supercharged Custom Eight. Throttle valve and choke valve interconnected so that throttle is opened slightly when carburetor is choked for starting. Should not require adjustment.

Model 67 Eight. Throttle valve and choke valve interconnected by 'throttle-cracking' device so that throttle is opened slightly when carburetor is choked. See article on URO-2 carburetors.

HUDSON:—Models LL, LT. Fast idle bar connected to choke valve lever serves as auxiliary stop for throttle stop screw for cranking and warming up period. Controlled by automatic choke. See article on Carter Climatic Control.

LA SALLE:—Model 350. Fast idle mechanism is integral with automatic choke. See separate article on Stromberg Automatic Choke with integral Fast Idle.

OLDSMOBILE:—Model F-34 (EX-23 Carburetor). Fast idle mechanism is integral with automatic choke. See separate article on Stromberg Automatic Choke with integral Fast Idle.

Model L-34. Stromberg Lever type fast idle mechanism. See separate article. Does not require adjustment.

PLYMOUTH:—Models PF, PG, PE. Throtttle valve and choke valve interconnected so that throttle is opened to fast idle position with choke valve more than ½ on. No adjustment required.

STUDEBAKER:—Dictator Model A, Commander Model B. Fast idle mechanism is integral with automatic choke. See separate article on Stromberg Automatic Choke with integral Fast Idle.

President Model C. Fast Idle mechanism is similar in design and adjustment to that used on 1933 President models. See article in Carburetion Section of Manual.

TERRAPLANE:—Models K, KU. Fast idle bar connected to choke valve lever serves as auxiliary stop for throttle stop screw for cranking and warming up. Controlled by automatic choke. See article on Carter Climatic Control.

THROTTLE CONTROL ADJUSTMENT (CRANKING)

FOR CHRYSLER SIX, DODGE, PLYMOUTH

On these cars, starting switch pedal and carburetor throttle valve are interconnected so that throttle is opened ½-1/3 while engine is being cranked. To adjust, loosen nut on movable plate on starting pedal, shift plate until gap between edge of adjusting plate and throttle cross shaft is 3/16" with throttle valve at idling (closed) position and starting pedal released. Tighten the adjusting nut. A smaller gap than specified will result in a greater throttle opening and excessive engine speed when engine begins to fire.

CARTER CARBURETORS

288-S—AUBURN, SIX CYLINDER MODELS 6-52X, 6-52-Y (1934).
285-S—CHEVROLET, STANDARD SIX MODEL DC (1934).
284-S—CHEVROLET, MASTER SIX MODEL DA (1934).
x-282-S—HUDSON, EIGHT, MODELS LL, LT (1934).
299-S—HUDSON, CHALLENGER MODEL LTS (1934).
283-S—PONTIAC EIGHT, MODEL 603 (1934).
x-281-S—TERRAPLANE, MODELS K, KU (1934).
295-S—TERRAPLANE, CHALLENGER MODEL KS (1934).

x- These models are equipped with Carter Climatic Control (Automatic Choke). See separate article.

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and economizing device (metering rod). Main nozzle is located at an angle in the upper or primary venturi with a secondary and a main venturi directly below this point in the mixing chamber. Fuel for main nozzle is metered by metering jet and metering rod. Accelerating pump discharges through a pump jet against the wall of the secondary venturi. Idle adjustment and accelerating pump setting are the only points requiring attention.

IDLE ADJUSTMENT:—Needle valve type controlling fuel mixture. Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, close throttle, adjust throttle stop screw if necessary to keep engine from stalling (correct idling speed 300 R.P.M. or approximately 5-6 M.P.H.). Turn idling adjusting screw in or clockwise until engine begins to miss (mixture too lean), then turn screw slowly out or counter-clockwise until engine fires smoothly. Idling screw controls fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Correct idling settings are as follows:

Car Model	Idling Screw Setting	Idling Speed
Auburn, 6-52X, 6-52Y	½-1⅛ turns open	360 R.P.M., 6 M.P.H.
Chevrolet, Std. & Mstr.	½-1½ turns open	400 R.P.M.
Hudson LL, LT, LTS	⅜-1 turn open	350 R.P.M., 5 M.P.H.
Pontiac 603	½-1 turn open	360 R.P.M., 6 M.P.H.
Terraplane K, KU, KS	⅜-1 turn open	350 R.P.M., 8 M.P.H.

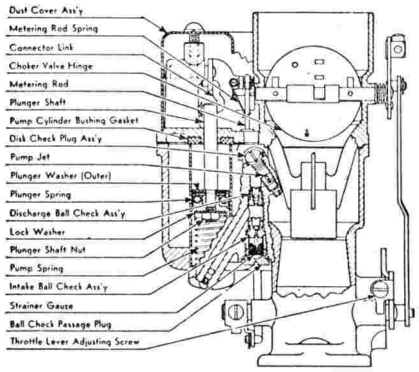
Check idling speed after completing idling adjustment and readjust throttle stop screw if necessary. Do not idle engine below 350 R.P.M. If correct idling adjustment cannot be secured, remove low speed jet tube and clean with compressed air. See that tube is seated airtight in casting at top and bottom. If necessary replace with new tube of same characteristics.

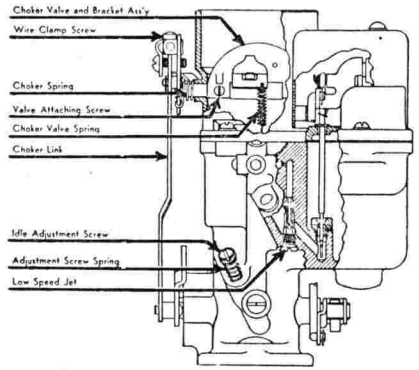
ACCELERATING PUMP:—Pump arm (on countershaft under dust cover) has three holes for engagement of pump plunger connector link to provide varied pump stroke. Medium setting with pin engaged in center hole is correct for ordinary temperature ranges and standard gasoline. Engage pin in inner hole (short pump stroke) for operation in hot climates, high altitudes, or with high test gasoline. Upper hole (long stroke) should be used for extremely cold temperatures. Accelerating pump countershaft should be lubricated at 5000 mile intervals. Take out dust cover screw (on top of cover) and fill threaded hole with a good grade of graphite grease.

METERING ROD (ECONOMIZER):—Fuel is metered by a two or three step metering rod being raised in the metering jet as the throttle is opened, allowing an increased fuel flow through the jet. No adjustment is provided but metering rods can be changed to secure leaner-than-standard fuel mixtures to compensate for special fuel or operating conditions, such as high altitudes. To change metering rod, take off dust cover, take off pin spring, turn rod one-quarter turn to left to disengage pump arm, lift rod out, being careful not to lose disc on rod. Insert new rod (with disc in place), holding rod vertically so that lower end of rod will enter jet in float chamber. Turn rod one-quarter turn to engage pin on pump arm (throttle must be closed). If rod is correctly assembled no difficulty will be experienced in connecting rod to the pin and rod will hang vertically. Replace pin spring and dust cover.

NOTE:—Metering rod setting should be checked whenever carburetor is serviced or when rods are changed. This will require a special gauge (see table below for correct gauge for each carburetor model). To check rod setting, remove dust cover, disengage upper end of throttle connector rod, back off throttle lever adjusting screw so that throttle closes tight, remove metering rod (see above), insert gauge in place of rod so that beveled end is seated in metering rod jet and gauge is held in vertical position. See that metering rod pin rests on top of gauge with throttle closed and upper end of connecting rod centering freely in the hole in the pump arm. If setting is not correct, bend lower end of throttle connector rod so that upper end centers freely in hole. Replace metering rod and dust cover and adjust throttle stop screw for correct idling speed.

Car Model	Carburetor Model	Gauge Part No.	Length
Auburn, 6-52X, 6-52Y	288-S	T-109-15	2.797″
Chevrolet, Std. & Mstr.	285-S, 284-S	T-109-15	2.797″
Hudson Eight LL, LT	282-S	T-109-15	2.797″
Hudson Chall. LTS	299-S	T-109-20	2.795″
Pontiac 603	283-S	T-109-15	2.797″
Terraplane K, KU	281-S	T-109-15	2.797″
Terraplane Chall. KS	295-S	T-109-20	2.795″





FLOAT LEVEL:—To check float level, take off float bowl cover, remove gasket, invert cover, measure distance from gasket seat (machined surface) on cover to nearest point on float (top when not inverted) at a point opposite the needle valve. Float level can be reset by bending lip of float lever. Correct float level settings are as follows:

Car Model	Carburetor Model	Float Setting
Auburn 6-52X, 6-52Y	288-S	⅜″
Chevrolet Std. & Mstr.	285-S, 284-S	⅜″
Hudson Eight LL, LT	282-S	13/32″
Hudson Chall. LTS	299-S	⅜″
Pontiac 603	283-S	⅜″
Terraplane K, KU, Chall. KS	281-S, 295-S	⅜″

CHOKE:—283-S, 284-S, 285-S, 288-S. Choke valves on these models are of the 'split-valve' type with one-half of the valve hinged and controlled by a spring The hinged portion of the valve is held closed by a trigger lock when carburetor is fully choked for starting, but is released as soon as the choke is opened slightly and operates as an automatic air valve during the warming up period. Adjust valve lip under pawl so that clearance between valve edge and carburetor wall with choke fully closed is .070-.075″ (284-S, 285-S).

281-S, 282-S, 295-S, 299-S. Choke valves on these models are fitted with a poppet type relief valve which opens when engine begins to fire and prevents over-choking.

Throttle Connector. On all models except 284-S, 285-S (Chevrolet), the choke valve and throttle valve are interconnected so that throttle is opened slightly when choke valve is closed. This provides a 'fast idle' for warming up. Throttle returns to closed position when choke valve is opened. Correct throttle opening with choke valve fully closed are as follows:

Car Model	Carburetor Model	Throttle Opening
Auburn 6-52X, 6-52Y	288-S	.031-.035″
Hudson LL, LT, LTS	282-S, 299-S	.036-.040″
Pontiac 603	283-S	.031-.035″
Terraplane K, KU, KS	281-S, 295-S	.036-.040″

CARTER (B & B) CARBURETORS

E6C1—CHRYSLER SIX, MODELS CA, CB (1934).
x-E6B1—DE SOTO SIX, MODEL SE (1934).
C6B1—PLYMOUTH STANDARD & DE LUXE SIX, MODELS PF, PG, PE (1934)
x- Sisson Automatic Choke standard on this model and optional on Chrysler and Plymouth. See separate article on Sisson Automatic Choke.

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and vacuum operated 'step-up' device (economizer). Fuel is metered by main metering screw under float chamber and by power orifice or step-up jet (for high speed or wide open throttle operation with step-up valve open). There are two idling ports, an upper port (above the throttle valve) and a lower port (below valve when throttle is closed) which is controlled by idling adjustment screw. Idle adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type operating on fuel mixture. Engine must be warmed up before adjustment is made. With engine warm and running, close throttle, adjust throttle shaft dog adjusting screw so that engine idles at approximately 300 R.P.M. or 6 M.P.H. Turn idling adjusting screw in or clockwise until engine begins to miss (mixture too lean), then turn screw slowly out or counter-clockwise until engine fires evenly. Adjusting screw controls fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Correct setting for adjusting screw is shown on table below. Check idling speed after completing adjustment and readjust as necessary. Do not idle engine at less than 300 R.P.M.

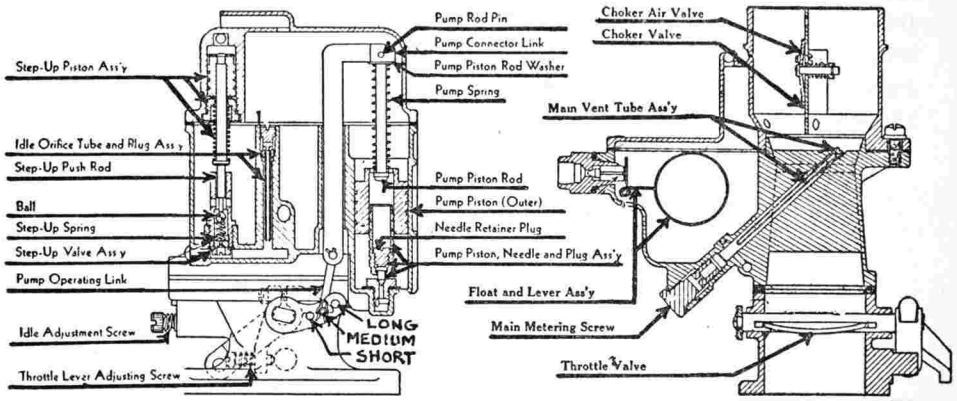
Car Model	Idling Screw Setting	Idling Speed
Chrysler CA, CB	½-1¼ turns open	300 R.P.M., 6 M.P.H.
De Soto SE	½-1¼ turns open	300 R.P.M., 6 M.P.H.
Plymouth PF, PG, PE	½-1¼ turns open	300 R.P.M., 6 M.P.H.

NOTE:—If correct idling adjustment cannot be secured, engine stalls while idling, or low speed operation is unsatisfactory, take out idle hole plug and idle adjustment screw and see that ports are not clogged, take out idle passage tube and idle jet tube and clean with compressed air.

ACCELERATING PUMP:—Accelerating pump is connected to throttle shaft lever and discharges fuel through a pump jet located in the venturi when the throttle is opened, supplying the extra fuel required for acceleration. Pump lever on throttle valve shaft has two or three holes for engagement of pump operating link to secure varied pump stroke. Pump operating link pin should be engaged in outer or end hole, providing maximum pump stroke for winter driving or extreme cold temperatures. Pin should be engaged in inner hole, providing minimum pump stroke for summer driving (hot climates), high altitudes, or high test gasoline. Center hole in lever provides an intermediate pump stroke and should be used for normal temperature ranges.

NOTE:—If acceleration is unsatisfactory, check pump setting (above), remove main metering jet and pump jet and clean with compressed air. Pump piston needle and seat assembly in lower part of pump cylinder should also be taken out and cleaned or replaced.

PERFORMANCE AND ECONOMY:—All jets are 'fixed' type (non-adjustable). Main metering screw is flow-tested and rated in accordance with capacity. It should not be gauged for size with wire drills. Main metering screw can be changed to secure leaner-than-standard fuel mixture to compensate for special fuels or operating conditions such as high altitudes (see specifications). If performance and economy are not satisfactory, examine step-up valve cage assembly, see that ball check is free and seats properly, that valve cage is screwed tight against its seat, that step-up push rod moves freely in upper and lower guides, and that step-up piston is not binding Check float level.



FLOAT LEVEL:—To check float level, take off float bowl cover (upper carburetor body casting), remove gasket, hold lip of float lever firmly against needle valve and measure distance from top edge of float bowl to top of float (not soldered seam). Use special gauge, Part No. 15222, or place a straightedge or metal rule across top of float bowl and measure distance from under side of rule to top of float. Distance should be as follows:

Car Model	Carburetor Model	Float Setting
Chrysler CA, CB	E6C1	5/64"
De Soto SE	E6B1	5/64"
Plymouth PF, PG, PE	C6B1	5/64"

Float level can be corrected by bending lip of float lever (not the bracket). To lower float level, bend lip of float lever toward needle valve. To raise float level, bend lip of float lever toward float.

CHOKE:—Choke valve is fitted with poppet type relief valve to prevent overchoking. Choke valve and throttle valve are interconnected so that throttle is opened to 'fast idle' position when choke valve is more than one-half closed. Throttle valve returns to closed position when choke valve is opened.

CARTER DOWNDRAFT CARBURETORS

Car Model	Yr.	Carb. No.	Metering Rod Standard Marking	Metering Rod Standard Part No.	Metering Rod 1 Size Lean Marking	Metering Rod 1 Size Lean Part No.	Metering Rod 2 Sizes Lean Marking	Metering Rod 2 Sizes Lean Part No.	Met. Rod Jet Size	Met. Rod Jet Part No.	Main Nozzle Size	Main Nozzle Part No.	Low Spd. Jet Tube Size	Low Spd. Jet Tube Part No.	Pump Jet Size	Pump Jet Part No.
AUBURN 6-52-X, Y	1934	288-S	64A47	75-112	—	—	—	—	#43	120-21S	#40	12-189	#72	11-141	#72	48-35
CHEVROLET Std.	1934	285-S	66A50	75-102	67A52	75-109	68A53	75-110	.0835"	120-49S	#40-51	12-182, 3	#72	11-138	#72	48-43
CHEVROLET Mstr.	1934	284-S	65A46	75-101	66A50	75-102	67A52	75-109	.089"	120-21S	#31	12-185, 6	#72	11-138	#72	48-43
HUDSON LL, T	1934	282-S	63-42	75-107	—	—	—	—	.09525"	120-53S	#30	12-184	#70	11-135	#70	48-36
HUDSON LTS	1934	299-S	62-42	75-120	—	—	—	—	.09275"	120-51S	#30	12-191	#68	11-145	#70	48-36
HUPMOBILE 421A	1934	258-S	67-47	75-75	68-49	75-82	69-50	75-83	#49	120-39S	#45	12-177	#72	11-129S	#72	48-35
PONTIAC 603	1934	283-S	64A40	75-98	—	75-99	—	75-100	#42	120-47S	#40	12-162	#70	11-135	#72	48-35
TERRAPLANE K, KU	1934	281-S	65A40	75-106	—	—	—	—	.09275"	120-51S	#40	12-162	#70	11-135	#72	48-35
TERRAPLANE KS	1934	295-S	65A40	75-119	—	—	—	—	.09275"	120-51S	#40	12-190	#70	11-135	#72	48-35

CARTER (B & B) DOWNDRAFT CARBURETORS

Car Model	Yr.	Carb. No.	Main Metering Screw Standard Flow	Main Metering Screw Standard Part No.	Main Metering Screw 1 Size Lean Less	Main Metering Screw 1 Size Lean Part No.	Main Metering Screw 2 Sizes Lean Less	Main Metering Screw 2 Sizes Lean Part No.	Main Vent Air Bleed Size	Tube Assem. Part No.	Stepup Jet Power Orifice Size	Stepup Jet Power Orifice Part No.	Idle Orifice Tube Size	Idle Orifice Tube Part No.	Pump Valve Cage Assem. Jet Size	Pump Valve Cage Assem. Part No.
CHRYSLER CA, CB	1934	E6C1	278-282cc.	159-40	—	159-22	—	159-23	.0315"	145-14S	.0374"	162-18	.0276"	123-18S	.0354"	48-44
DE SOTO SE	1934	E6B1	278-282cc.	159-40	—	159-22	—	159-23	.0315"	145-14S	.0374"	162-18	.0276"	123-18S	.0354"	48-44
PLYMOUTH PE,PF,PG	1934	C6B1	230-234cc.	*159-32	—	159-33	—	159-34	.0315"	145-18S	.0276"	162-16	.0276"	123-18S	.0315"	48-39

*—1 Size Rich—159-19.

DETROIT CARBURETORS

X-8244—CADILLAC V-8, MODEL 355-D (1934).
51—CADILLAC V-12, MODEL 370-D (1934).
CADILLAC V-16, MODEL 452-D (1934).

NOTE:—The V-12 and V-16 cars are equipped with two carburetors each. One carburetor is used for each cylinder bank. Carburetors must be equalized as well as adjusted in order to assure smooth running. Complete adjustment procedure is given below and should be followed closely. The V-8 cars use only one carburetor and esualizing instructions can be disregarded for this model.

TYPE:—Expanding air valve updraft type with auxiliary unit consisting of starting device or priming jet, accelerating pump and power jet. Main metering unit consists of two hinged air valves or vanes which engage an aspirating tube so that aspirating tube is raised as vanes open. Aspirating tube is attached to a spring-loaded metering orifice tube so that orifice is withdrawn from metering pin and fuel supply automatically increased as vanes open to admit more air. Fuel is automatically and correctly proportioned to air for all positions of the throttle valve.

When carburetor is choked for starting, choke lever on carburetor rotates starting sleeve (pump housing) holding the main air vanes closed through a spring-operated lever and lining up passages in the upper end of the pump housing and carburetor body so that fuel is drawn up through the hollow stem of the accelerating pump and discharges through a priming port above the throttle valve directly into the mixing chamber. Throttle valve must be kept closed when engine is started (kicker rod on throttle lever will open throttle correct amount for starting—see adjustment below). Metering pin adjustment and kicker rod clearance (for starting) are the only points requiring attention.

PRELIMINARY ADJUSTMENT:—See that starting sleeve on carburetor is rotated so that choke lever is against stop on float chamber cover when choke control button on instrument panel is pulled out. This is important in order to line up priming port passages in pump housing and carburetor body for starting. If carburetors are completely out of adjustment, turn metering pin up until it just seats in aspirating tube orifice and then back metering pin off exactly 2¾ turns (355-D) or 4 turns (370-D), 452-D). Run engine until it is thoroughly warmed up. Close throttle and allow engine to idle. Idling speed should be 320 R.P.M. See idling adjustment below.

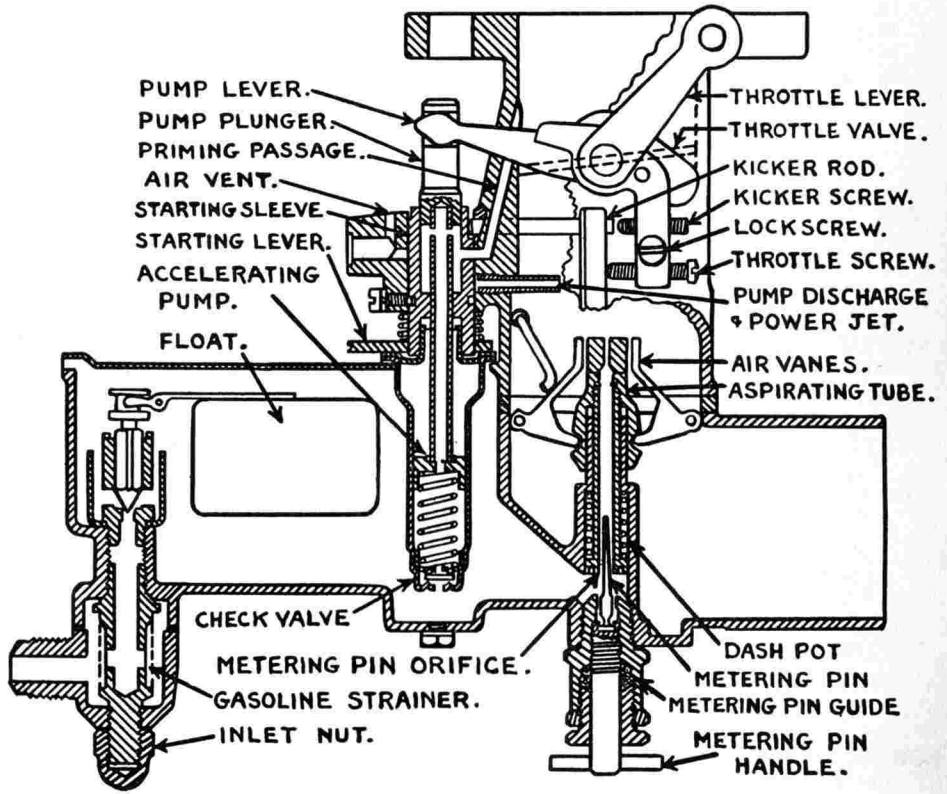
IDLING ADJUSTMENT:—Idling speed is controlled by throttle lever stop screw. With carburetor off the engine, adjustment can be checked by using a feeler gauge to check distance between edge of throttle valve and carburetor wall. Turn stop screw until this clearance is .006″ (355-D) or .004″ (370-D, 452-D) with throttle closed. To adjust on the engine, turn stop screw until engine speed is 320 R.P.M. This can be checked on the V-12 and V-16 models by removing oil filler cap on valve cover on one cylinder bank and noting rocker arm movement. Rocker arm should move 40 times in 15 seconds with engine running at 320 R.P.M.

METERING PIN (IDLING) ADJUSTMENT:—Metering pin of each carburetor should be adjusted by turning pin up or clockwise until engine begins to miss or speed decreases and then turning pin down or counter-clockwise until engine fires smoothly. This adjustment should be made slowly so that metering pin will not be turned beyond the point where smooth running is secured. Standard metering pins are listed in table below. No optional metering pins are supplied.

Car Model	Metering Pin Sizes
355-D V-8	#14
370-D V-12	#12
452-D V-16	#14

EQUALIZING CARBURETORS:—Use special Cadillac equalizing gauge consisting of a 'U' tube partly filled with mercury which should be hung vertically on one of the radiator brace rods and connected to each intake manifold. A piece of rubber tubing is connected to each leg of the 'U' tube and special fittings can be secured so that the other end of the tubing can be connected to the vacuum fittings on the manifold after the brake booster and windshield wiper lines have been disconnected. Disconnect right hand carburetor throttle rod. With equalizing gauge in place, idle engine and note mercury level in tube. If mercury level is at same height in both legs of the tube, and engine idles at 320 R.P.M. (check rocker arm to see that it operates 40 times in 15 seconds), carburetors are correctly equalized. If mercury level is even and engine idles too fast, back off throttle stop screw in each carburetor an equal amount until correct speed is secured. If mercury levels are not equal and engine idles too fast, back off the throttle stop screw on the carburetor feeding the bank on which the mercury level is lower. If mercury levels are not equal and engine speed is too slow, turn up the throttle stop screw on the carburetor feeding the bank on which the mercury level is higher. With correct adjustment engine should idle at exactly 320 R.P.M. and mercury level should be equal in both tubes.

Check metering pin setting on each carburetor by turning pin in or clockwise until engine begins to miss, and out or counter-clockwise until engine begins to roll and then set metering pin exactly midway between these points. Recheck idling speed and mercury level in equalizing gauge. Adjust right hand carburetor throttle rod so that it can be connected without disturbing position of throttle valve, connect throttle rod, open throttle and run engine at 1000 R.P.M. If mercury levels are not even at this speed, readjust right hand throttle rod slightly. Close throttle and check mercury level at idling speed.



KICKER ROD (STARTING) ADJUSTMENT:—With carburetor off engine and choke in open position, check clearance between edge of throttle valve and carburetor wall (throttle must be closed). Adjust by turning kicker screw in or out until clearance is .017″ (355-D), .013″ (370-D, 452-D). Use a feeler gauge to set this clearance.

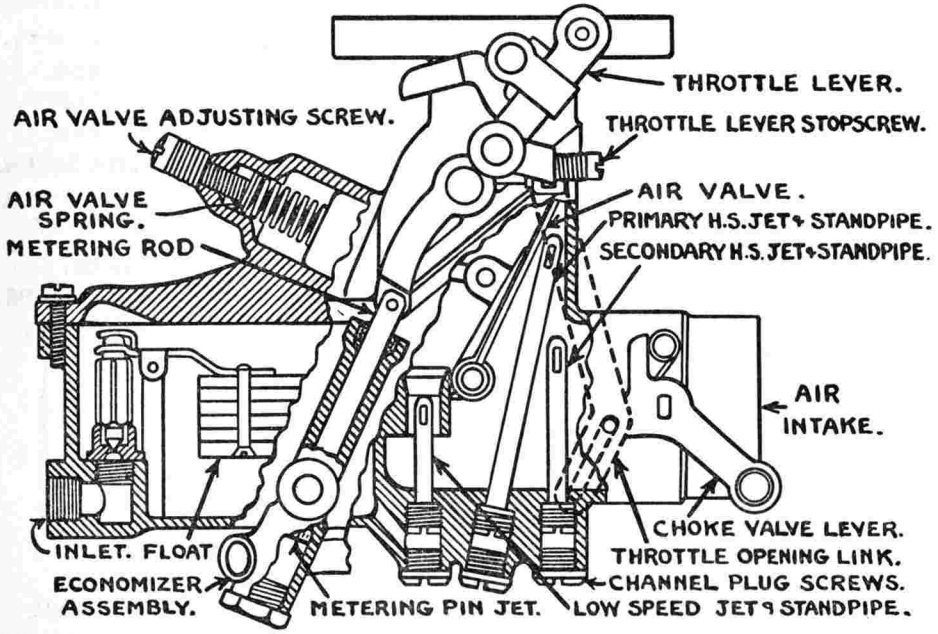
AUTOMATIC CHOKE:—All models are fitted with a semi-automatic choke which is designed to control choke during the warming up period. Manual choke control should be used in the usual manner to start a cold engine but should be pushed in immediately when the engine starts. The semi-automatic choke consists of a thermostatic spring mounted on the carburetor riser which is linked to the main air vane control lever. Tension on the air vanes is pro-

MARVEL CARBURETORS

AC-10-1530—CONTINENTAL FOUR, MODEL 41 (1934).

TYPE:—Automatic air valve updraft type with fixed jets and thottle operated economizer. Low speed jet is located in small venturi in mixing chamber. Primary and secondary jets are located directly under automatic air valve. All jets are of the 'fixed opening' type and are non-adjustable. Automatic air valve is controlled by a dash pot plunger and spring in the housing directly under the air valve adjusting screw. The air valve adjusting screw regulating the air valve spring tension is the only adjustment on the carburetor.

ADJUSTMENT:—Engine should be thoroughly warmed up before adjustment is made. With engine warm and running, adjust throttle stop adjusting screw so that engine runs at approximately 6 M.P.H. (correct idling speed). If engine stops or hesitates and stumbles, turn air valve adjusting screw in slightly. To adjust air valve turn air valve adjusting screw to the left or out slowly until engine begins to miss or hesitate, indicating that mixture is too lean. Then turn adjusting screw to the right or in until engine fires smoothly (turn screw 1/16 turn at a time until correct setting is secured). Check setting by quickly opening throttle about one-half and then allowing it to snap back to closed position. If engine stalls, indicating a too lean mixture, turn air valve adjusting screw to right or in slightly. If engine rolls, indicating a too rich mixture, turn adjusting screw to left or out slightly.



ECONOMIZER:—Economizer consists of a metering jet and metering pin connected to the throttle lever. The fuel supply to the primary and secondary jets is controlled by the economizer at all speeds below 50 M.P.H. to assure maximum economy. At speeds above 50 M.P.H. or with wide open throttle the economizer permits a greater fuel flow for maximum power. Economizer is entirely automatic and requires no attention. No adjustments are provided.

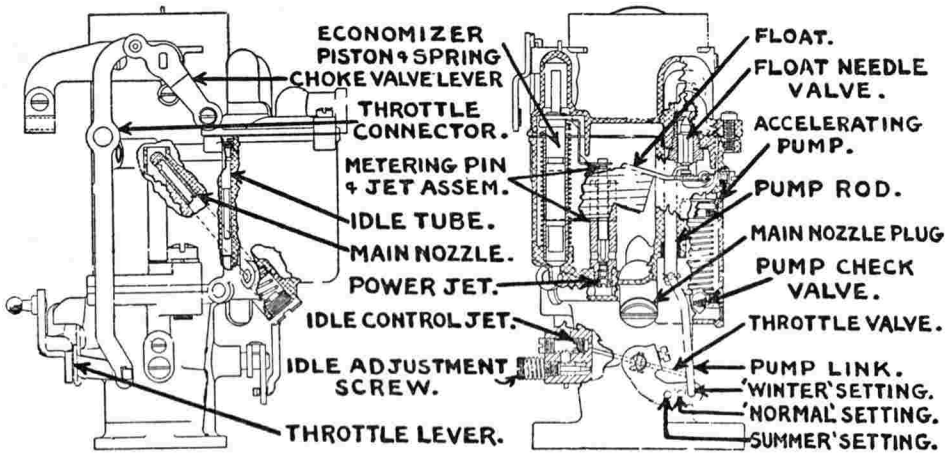
PERFORMANCE:—Carburetor performance throughout entire operating range should be satisfactory if air valve adjustment (above) is correct. Jets should not be changed except for permanent operation at elevations above 3000 feet.

CHOKE:—Choke valve is provided with a relief poppet valve and is interconnected with the throttle lever so that throttle is opened slightly when carburetor is choked. Choke linkage should be adjusted so that choke valve is fully closed with choke button on instrument panel pulled out and fully open with choke button pushed in.

FLOAT LEVEL:—Float chamber is sealed and is vented through an air tube in the carburetor air horn. This prevents mixture becoming richer if air cleaner is allowed to become clogged. To check float level, take off float chamber cover (upper carburetor body), being careful not to damage air valve mechanism, measure distance from top of float to top edge of float chamber bowl. Correct setting should be 11/32" with float valve held closed by pressing up on float lever. Float valve and float valve seat should be replaced as matched sets and not individually.

B 10-1603—LA FAYETTE, SERIES 110 (1934).

TYPE:—Plain tube, downdraft type with throttle operated accelerating pump and vacuum economizer or 'step-up device'. All fuel is metered by metering pin and jet and power jet (in lower end of metering jet assembly). Metering pin is controlled by vacuum economizer piston (see Economizer Section below). Fuel for idling is taken from the main nozzle channel up through the idle tube to a cross passage in which the idle air vent jet is located. The fuel mixture is then taken down through a passage and discharged through two ports opposite the throttle edge. The lower idle port (controlled by the idle adjusting needle) supplies all fuel for closed throttle idling, the upper port (above the throttle edge when the throttle is closed) acting as an additional air bleed. When the throttle is opened slightly the upper port comes into action and all fuel for car speeds up to approximately 18 M.P.H. is supplied by the idle system. The main nozzle comes into action at about 18 M.P.H. and acts in conjunction with the idle system at speeds up to 35 M.P.H. At speeds greater than 35 M.P.H. all fuel is supplied by the main nozzle. Idling adjusting needle and accelerating pump (seasonal setting) are the only points requiring attention.



IDLING ADJUSTMENT:—Needle valve type operating on gasoline mixture. With engine thoroughly warmed up, set throttle valve adjusting screw so that engine runs at approximately 7 M.P.H. Then adjust idling adjusting screw until engine fires evenly (turn screw in for leaner mixture and out for richer mixture). Check idling speed after completing adjustment and readjust if necessary to secure correct idling speed of 7 M.P.H. (car speed in high gear on level road).

MARVEL CARBURETORS

ACCELERATING PUMP:—Accelerating pump is connected through a connecting rod to a lever on the throttle valve shaft. Throttle shaft lever has three holes for engagement of connecting rod to provide varied pump stroke. 'Normal' setting with connecting rod engaged in center hole of lever should be used for normal temperature ranges. For extreme warm climates connecting rod should be engaged in inner hole, giving minimum pump stroke. For winter driving or extremely cold temperatures connecting rod should be engaged in outer hole for maximum pump stroke and greatest accelerating charge.

PERFORMANCE:—Carburetor performance throughout entire operating range should be satisfactory if idling adjustment and accelerating pump connection are correct (above). Jets should not be changed except for permanent operation at elevations above 3000 feet.

ECONOMIZER:—Economizer consists of a metering pin and jet controlled by a vacuum piston. The lower end of the vacuum piston chamber is connected to the carburetor barrel below the throttle valve. For all part-throttle positions, manifold vacuum will hold the piston at the lower end of the stroke (against the tension of the piston spring) so that the metering pin is held in position in the metering pin jet, limiting the fuel flow. When the throttle is opened, the fall in vacuum will allow the spring to force the piston upward, lifting the metering pin in the jet and permitting a greater fuel flow to the nozzle for acceleration and full power operation. The spring is calibrated to allow maximum economy (metering pin in jet) for all car speeds up to 65 M.P.H. on level road.

Metering Pin Timing Height. To check metering pin timing height (which controls economizer action), remove float bowl cover, hold vacuum piston down on seat (lower end of stroke with metering pin in metering jet), measure distance from top of metering pin to top of metering pin housing. This should be 13/64". Adjust by bending metering pin fork or lifter.

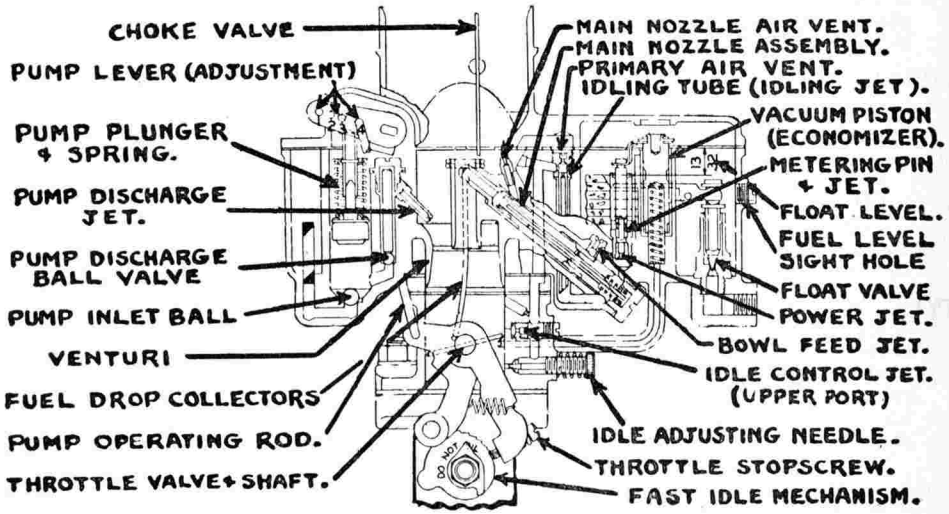
FLOAT LEVEL:—To check float level, take off float bowl cover, take off gasket, invert bowl cover, measure distance from gasket seat on bowl cover to top of float (bottom of float when not inverted) at point directly opposite needle valve assembly. Correct setting should be 1⅜". There is a fuel level sight hole on the side of the bowl closed normally by a plug. With engine idling, fuel level in bowl should be even with the lower edge of the sight hole.

CHOKE:—Choke valve is fitted with a spring-controlled relief valve or fly to prevent over-choking. Check choke linkage and see that choke valve is closed with choke control button pulled out and wide open with button pushed all the way in.

BB-1 10-1633—BUICK, MODEL 34-40 (1934).

TYPE:—Plain tube, downdraft, dual type with 'Cold Idle' (fast idle) control, throttle operated accelerating pump, and vacuum economizer or 'step-up' device. Carburetors have two independent mixing chambers, main nozzle systems, idle systems, and throttle valves (valves mounted on same shaft and will not require synchronization). A single accelerating pump and vacuum economizer (metering pin and metering jet) serve both carburetor barrels. Fuel for main nozzles is fed directly from the float bowl to the nozzle through the 'bowl feed jet' and also through the metering pin-and-jet (economy device). Main nozzle is air-bled through a separate nozzle air vent within the mixing chamber. Fuel for idling is taken from the main nozzle channel below the metering pin and jet through the idle fuel channel and is metered by the idle jet. This fuel is mixed with air admitted through the primary air vent in the cross passage and the fuel mixture is then taken down through a passage to the idle ports opposite the throttle valve. The lower idle port below the throttle (when throttle is closed) is controlled by the idle adjusting needle and supplies all fuel for closed-throttle idling, the secondary idle air vent and upper idle port (in which the idle control jet is located) acting as additional air-bleeds. As soon as the throttle is opened slightly, the upper idle port discharges additional fuel. All fuel for car speeds up to 18 M.P.H. is supplied by the idle system. At this point the main nozzle comes into action and supplies more fuel progressively up to 40 M.P.H. when fuel delivery from the idle ports ceases, the main nozzle then supplying all fuel. The fuel drop collectors on the main nozzles have the effect of evening up the fuel delivery and make the main nozzle discharge smoother at car speeds less than 25 M.P.H. The idle adjusting needles and accelerating pump adjustment (seasonal setting) are the only two points requiring attention.

IDLE ADJUSTMENT:—Needle valve type controlling fuel mixture. Engine must be warm when adjustments are made (cold idle not operative). With engine thoroughly warm and running, close throttle, adjust throttle stop screw so that engine speed is equivalent to 7-8 M.P.H. Adjust idle adjusting needle for each carburetor barrel in turn. Turn idle adjusting needle in or clockwise until engine hesitates or misses (mixture too lean), then turn needle out or counter-clockwise until engine rolls (mixture too rich), finally turn needle in just enough to eliminate rolling. This will give the richest setting possible without rolling and will give smoother road performance than a leaner setting. Correct setting should be ½-¾ turn open. After adjusting both idle adjustment needles, check idling speed and readjust throttle stop screw to secure correct (7-8 M.P.H.) speed.



PERFORMANCE:—Performance should be satisfactory throughout entire driving range if idling adjustment has been correctly made and accelerating pump setting and vacuum economizer operation are correct. All metering jets are 'fixed' type and non-adjustable. Jets should be changed only for permanent operation at elevations greater than 3000 feet.

ACCELERATING PUMP:—Accelerating pump is operated by the throttle valve lever and discharges fuel through a pump discharge jet into the mixing chamber when the throttle is opened. The pump follow-up spring above the pump plunger prolongs the pump stroke. Accelerating pump lever has four holes marked 1-2-3-4 for connection of the pump operating link. Minimum pump discharge (shortest stroke) is secured with link connected in hole #1. Hole #4 provides maximum pump discharge (longest stroke). #3 is correct connection for normal operating conditions. Use #2 (or #1 for extreme conditions) for extremely hot weather or high test gasoline. Use #4 for extremely cold weather or low grade fuel.

MARVEL CARBURETORS

ECONOMIZER:—Economizer consists of a metering pin and jet controlled by a vacuum piston. The lower end of the vacuum piston chamber is connected to the carburetor barrel below the throttle valve. For all part-throttle positions, manifold vacuum will hold the piston down at the lower end of its stroke (against the tension of the piston spring) so that the metering pin is held in position in the metering jet, limiting the fuel flow for maximum economy. When the throttle is opened, the fall in vacuum allows the spring to force the piston upward, lifting the metering pin in the jet and permitting a greater fuel flow for acceleration and full power operation. The spring is calibrated to secure maximum economy (metering pin in jet) for all car speeds up to 75 M.P.H. on level road.

Metering Pin Timing Height. To check metering pin timing height (which controls economizer action), remove float bowl cover, hold vacuum piston down on seat (lower end of stroke with metering pin in metering jet), measure distance from top of metering pin to top of metering pin guide and jet assembly. This distance should be 13/64″. Adjust by bending metering pin fork or lifter.

FLOAT LEVEL:—With engine idling, fuel level in float bowl should be ¾″ below top face of bowl, or 1/16″ below the center of the sight hole in the side of the bowl (sight hole closed normally by a plug). To check float level, remove float bowl cover, hold float up by hand with needle valve seated, measure distance from top face of float bowl to top of float cork. Distance should be 13/32″.

CHOKE:—This model fitted with Delco-Remy Carburetor Control (Automatic Choke) Model 498-D. See separate article on Automatic Choke for complete data.

ED1S 10-1577—BUICK, MODEL 50 (1934).
ED2S 10-1579—BUICK, MODEL 60 (1934).
ED3 10-1581—BUICK, MODEL 90 (1934).

Delco-Remy Carburetor Control Model 498-C (Automatic Choke) used on all models. See separate article for complete data on Automatic Choke.

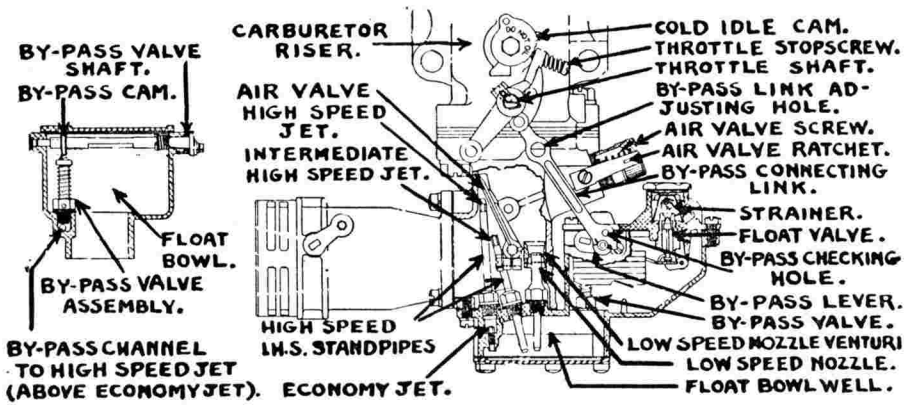
TYPE:—Automatic air valve, updraft, dual type with 'fast idle', throttle operated economizer, and Marvel Heat Control (automatic thermostatic control). Carburetors have independent mixing chambers, jet assemblies, air valves, and throttle valves (throttle valves are mounted on the same shaft and do not require synchronization). Both air valves are controlled by a single dashpot and adjusting screw assembly so that both carburetor barrels are adjusted simultaneously.

All jets are 'fixed' type and non-adjustable. Low speed jet is located in venturi at side of air valve and is fed directly from the float bowl well. High Speed and Intermediate High Speed jets are located directly under air valve and operate when air valve opens. Intermediate high speed jet is fed directly from the float bowl well in the same manner as the low speed jet. High speed jet is fed with fuel metered by Economy Jet located directly below high speed jet standpipe for all intermediate speeds, but additional fuel is by-passed to the high speed jet by the throttle-operated economizer for high speed or full-throttle operation (economizer is normally closed and does not meter fuel for high speed jets as in previous Buick carburetor designs). Adjust idle screw for correct idling speed of 8 M.P.H. See separate article on "Fast Idle', below.

ADJUSTMENT:—Engine must be thoroughly warm when adjustments are made. If necessary, make a preliminary adjustment of air valve screw by turning screw in or out until end of screw is flush with end of ratchet, warm up engine, close throttle, allow engine to idle. Turn air valve adjusting screw to left or counter-clockwise until engine hesitates or misses, indicating that mixture is too lean, then turn screw in or clockwise slowly (three or four notches at a time) until engine runs smoothly. Check adjustment by opening throttle slightly and then snapping it closed. If engine stalls (mixture too lean), turn air screw in or clockwise slightly. If engine rolls (mixture too rich), turn screw out or counter-clockwise slightly.

PERFORMANCE:—If air valve adjustment has been properly made, performance should be satisfactory throughout entire driving range. Jets should be changed only to compensate for high altitudes (permanent operation at elevations greater than 3000 feet). Air valve spring length should be exactly 1½″. If air valve spring has been tampered with or length is not 1½″, replace spring.

ECONOMIZER:—Economizer consists of a by-pass valve which supplies additional fuel to the high speed jets when the car is operated at high speeds or with wide open throttle (heavy pulling or acceleration). This fuel from the by-pass valve enters the lower end of the high speed jet standpipe directly above the economy jet which meters all fuel for the high speed jet for part-throttle operation when by-pass valve is closed. Economizer is not adjustable and should not require attention except when carburetor is disassembled and by-pass valve cut-in point setting has been lost.



To set cut-in point, disconnect lower end of by-pass valve connecting link, back off idle screw until it is clear of cold idle control cam, move idle screw lever to extreme idle position. Hold the lever in this position, then turn by-pass valve shaft lever counter-clockwise until the cam on the shaft makes contact with the by-pass valve (this point will be felt as the shaft is turned). Hold the by-pass valve shaft lever in this position and adjust length of connecting link by expanding or contracting the shaft at the hole near the upper end until the checking hole in the lower end of the link (directly above regular shaft hole in link) fits freely over small end of by-pass valve shaft lever stud. Then connect the by-pass lever stud in the regular connecting hole on the link and replace the cotter pin. A special tool is available for adjustment of connecting link. With this tool the hole in the link should be expanded at right angles to link axis to shorten the link length, or parallel to the link axis to lengthen the link.

FLOAT LEVEL:—To check float level, take off float cover, invert and measure distance from gasket seat on float cover to top of float cork (bottom when not inverted). This distance should be 1 7/32″.

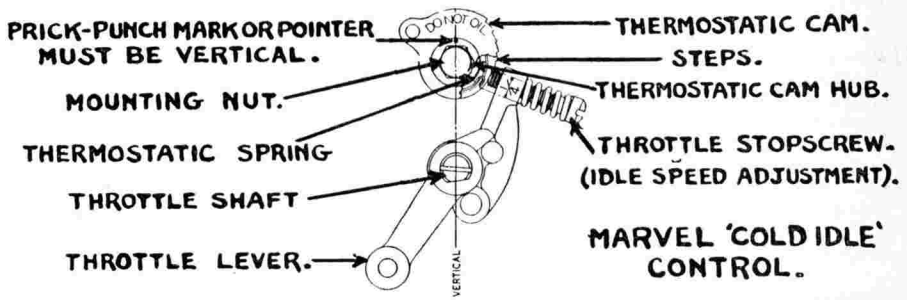
CHOKE:—Choke valve is conventional butterfly type mounted in air horn (off-center pivot) and is controlled by the automatic choke mechanism. See special article on Delco-Remy Carburetor Control Model 498-C.

MARVEL COLD IDLE (FAST IDLE) CONTROL

USED ON BUICK MODELS 40, 50, 60, 90

DESCRIPTION:—The Cold Idle Control consists of a thermostatically operated cam mounted on the carburetor riser which serves as a stop for the idle adjusting screw. The thermostat is located within the cam and rotates the cam in a clockwise direction when the engine is cold. The cam then moves the idle adjusting screw outward and automatically increases the idling speed, providing a 'fast idle' for warming up. As the engine temperature rises the cam is rotated counter-clockwise, allowing the idle adjusting screw to move toward the cam until the engine speed drops to the normal 'hot' or slow idle speed of 8 M.P.H.

ADJUSTMENT:—The Cold Idle Control should not require adjustment or attention in service. The setting can be checked as follows: Loosen nut in center of the thermostatic cam, rotate cam hub until prick-punch mark is directly above nut (or pointer is vertical on Model 40), tighten nut, open throttle momentarily to allow cam to assume correct position (thermostatic spring will not rotate cam while idle screw is resting on cam surface) . Warm up engine, note position of idle screw on cam. Idle screw should contact cam on its thinnest portion within ¼" limit adjoining the first cam step. If idle screw contact point is not within these limits, loosen cam nut and rotate cam hub slightly (opening throttle to allow cam to assume correct position). If hub must be rotated more than 5° to secure correct idle screw position on cam, replace entire cold idle cam assembly. Do not oil any part of the mechanism.



MARVEL UPDRAFT CARBURETORS

Car Model	Yr.	Carb. No.	Standard Parts Nos. Low Speed Nozzle	Int.	High Spd. Jet	High Speed Jet	Metering Pin Jet	Low Spd. Nozzle	High Altitude Parts Nos. Int.	High Speed Jet	High Speed Jet	Metering Pin Jet	Air Spring	M. P. Assem.	Tail Clearance
BUICK 50	1934	10-1577	47-105-B	49-	75-E-26	49- 80-C-33	49-75-A-10x	47-105-B	49-	70-E-26	49- 75-C-28	49-70-A-10x	24-315	———	.008-.012"
*BUICK 50	1934	10-1577	47-105-B	49-	75-E-26	49- 80-C-33	49-75-A-10x	47- 95-B	49-	70-E-26	49- 75-C-28	49-75-A-10x	24-315	———	.008-.012"
BUICK 60	1934	10-1579	47-110-B	49-	75-E-20	49- 85-C-24	49-75-A-10x	47-110-B	49-	70-E-20	49- 75-C-20	49-70-A-10x	24-315	———	.018-.022"
*BUICK 60	1934	10-1579	47-110-B	49-	75-E-20	49- 85-C-24	49-75-A-10x	47-100-B	49-	70-E-20	49- 70-C-18	49-70-A-10x	24-315	———	.018-.022"
BUICK 90	1934	10-1581	47-120-B	49-	85-E-28	49-120-C-26	49-90-A-10x	47-120-B	49-	80-E-28	49-110-C-26	49-80-A-10x	24-316	———	.018-.022"
*BUICK 90	1934	10-1581	47-120-B	49-	85-E-28	49-120-C-26	49-90-A-10x	47-110-B	49-	80-E-16	49- 70-C-20	49-90-A-10x	24-316	———	.018-.022"
CONTINENTAL 41	1934	10-1530	49- 85-A-10	49-	90-E-22	49- 70-C-16	84-092-C	49- 85-A-10	49-	90-E-16	49- 70-C-16	84-092-C	24-415	173-607	.016-.020"

*—Cars equipped with Duplex Air Cleaner. x—Economizer Jet in Buick Models.

MARVEL DOWNDRAFT CARBURETORS

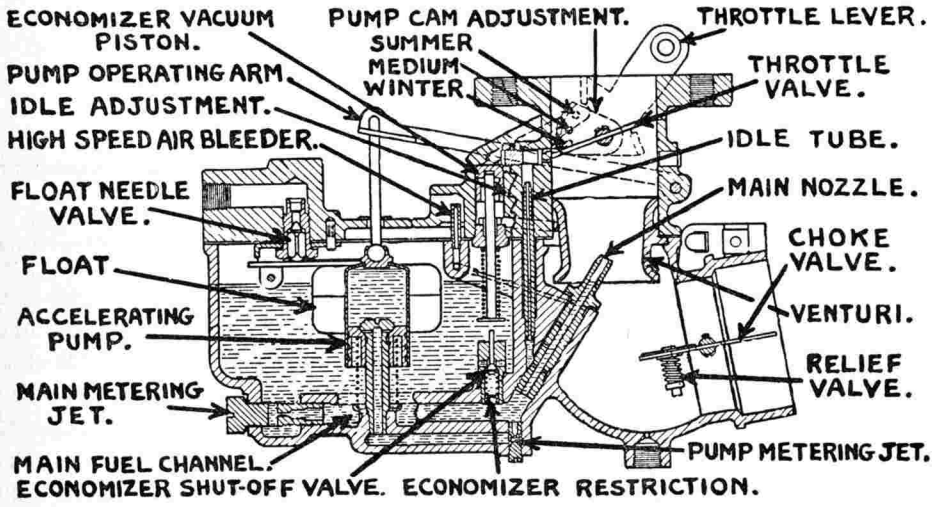
Car Model	Yr.	Carb. No.	Standard Parts Nos. Metering Pin & Jet	Power Jet	Idle Air Vent	High Alt. Parts Nos. Metering Pin & Jet	Power Jet	Idle Air Vent	High Speed Nozzle	Bowl Feed Jet	Idle Tube	Idle Control Jet	Pump Disch. Jet
BUICK 40	1934	10-1633	280-1109	49-500-J	———	280-1107	49-450-J	———	47- 115-D	49-110-M	49-578-K	49-35-G	49-24-N
CONT. FLYER	1933	10-1549	280-1105	49-450-J	49-H-57	280-1103	49-300-J	49-H-57	47- 85-C	———	49-587-I	———	49-47
CONT. ACE	1933	10-1545	280-1109	49-290-F	49-H-47	280-1107	49-250-F	49-H-47	47- 110-C	———	49-578-I	———	49-47
LAFAYETTE 110	1934	10-1603	280-1107	49-490-J	49-63-H	280-1106	49-400-J	49-79-H	47-1100-C	———	49-578-I	———	49-31-P
CHEVROLET x	32-3	B-2-SU	280-1106	49-450-J	49-57-H	280-1104	49-370-J	49-66-H	———	———	———	———	———
PLYMOUTH x	1933	B-2-SU	280-1105	49-450-J	49-57-H	280-1104	49-370-J	49-66-H	———	———	———	———	———
DODGE x	1933	B-2-SU	280-1105	49-450-J	49-57-H	280-1104	49-370-J	49-66-H	———	———	———	———	———

STROMBERG CARBURETORS

UR-23—STUDEBAKER, DICTATOR MODEL A (1934).
URO-2—FRANKLIN, SERIES 18 AND 19 (1934).
GRAHAM, STANDARD EIGHT MODEL 67 (1934).

NOTE:—See separate articles on Stromberg Automatic Choke and Fast Idle mechanisms for complete data where they are used. Model UR-2 Studebaker Dictator fitted with built-in automatic choke and fast-idle. In all cases where fast-idle mechanisms are used, carburetor adjustments should not be made until engine is thoroughly warmed up and idling speed has returned to hot or 'slow' idle with choke valve wide open.

TYPE:—Plain tube updraft type with positively operated accelerating pump and vacuum economizer. Graham model is fitted with a 'throttle-cracking' device connected to the choke valve lever for starting (see data below). Main discharge jet is air bled to control mixture so that fuel flow through jet is restricted at partial throttle (high vacuum) and increased at open throttle (low vacuum). All fuel for main discharge jet is metered by main metering jet under float bowl (except for high speed or open throttle when additional fuel is by-passed through economizer by-pass jet). Idle adjustment and accelerating pump adjustment (summer-normal-winter setting) are the only points requiring attention.



IDLING ADJUSTMENT:—Air bleed type operating on air. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle (adjust throttle lever stop screw if necessary to keep engine from stalling). Turn idling adjusting screw out until engine begins to hesitate or miss, then turn screw in until engine fires smoothly and maximum speed is attained. Idling screw operates on air and should be turned out for leaner mixture and in for richer mixture. After idling adjustment has been completed readjust throttle stop screw if necessary to secure correct idling speed.

If correct idling adjustment cannot be secured, take out idle discharge hole plug and clean out idling ports with compressed air. The idling tube can also be taken out and cleaned with air if the carburetor is disassembled.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jet is of the 'fixed' type and is not adjustable. Jet size is stamped on outer face of jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuel or operating conditions of the engine such as high altitudes.

Economizer is controlled by a vacuum piston. At intermediate speeds below 60 M.P.H. or partial throttle positions, economizer valve remains closed so that all fuel for main discharge jet is metered by main metering jet. When the throttle is opened the economizer needle plunger is forced down, opening the economizer valve, and allowing additional fuel to flow through the economizer restriction (by-pass jet) to the discharge jet. Economizer is not adjustable and should not require attention.

ACCELERATING PUMP:—Accelerating pump is operated by a lever and cam on the throttle valve shaft. The pump reducer or metering jet located on the bottom of the carburetor meters the fuel delivered by the pump.

Adjustment:—Pump operating cam on throttle valve lever has three holes to secure varied pump stroke. The center hole providing a medium pump stroke should be used for ordinary temperature ranges and ordinary gasoline. The upper connecting hole providing a minimum pump stroke should be used for hot weather or high test gasoline. Lower connecting hole providing maximum pump stroke should be used for very low temperatures.

FLOAT LEVEL:—Fuel level in float chamber is set at exactly 9/16″ below the top edge of the float chamber (gasket removed) with engine not running. Float level can be changed to correct fuel level by bending float lever at the corner between the float and the needle valve. To check float level, measure distance from gasket seat on float chamber cover (gasket removed) to top of float at center. This distance should be 11/64″. On Studebaker model, check distance from gasket seat on float cover to bottom of float. This distance should be 1 5/16″.

THROTTLE-CRACKING DEVICE:—On the Model URO-2 carburetor choke valve and throttle valve are connected so that throttle valve is opened .046″ with choke valve fully closed to facilitate starting. This can be checked by fully closing choke valve and noting throttle position. To set 'throttle-cracking' linkage, insert a #56 drill between the edge of the throttle valve and the carburetor barrel, close throttle against the drill, loosen adjusting screws on linkage, close choke tightly and tighten adjusting screws. Check adjustment to make certain that choke valve opens completely.

CHOKE:—Choke valve is fitted with relief poppet valve to prevent over-choking. Adjust choke valve linkage so that choke valve is closed tightly with choke control button on instrument panel pulled all the way out and wide open with control button pushed all the way in.

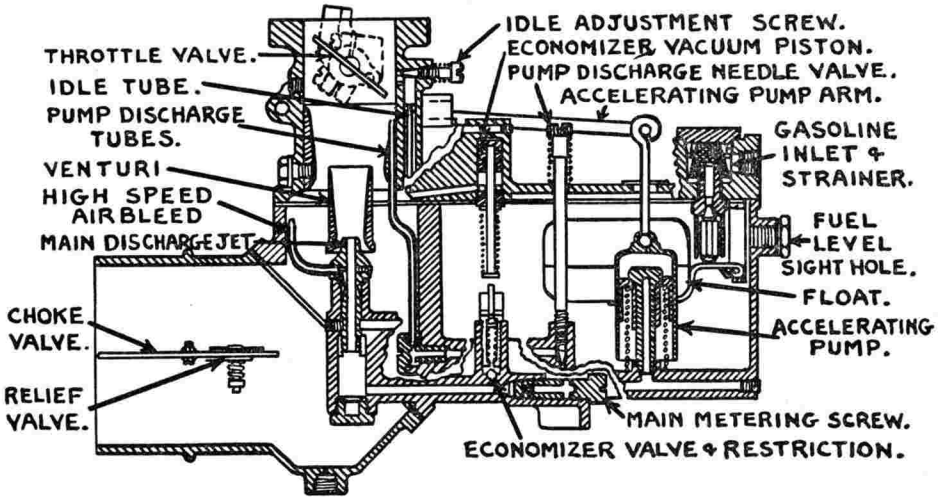
UUR-2—CUNNINGHAM, MODEL V-10 (1934).
HUPMOBILE, MODEL 422 (1934).
HUPMOBILE, MODEL 426 (1934).
NASH, AMBASSADOR EIGHT, SERIES 1290 (1934).

TYPE:—Twin updraft type with accelerating pump and vacuum economizer. There are two carburetor barrels with independent main discharge jet assemblies and throttle valves (throttle valves operate on the same shaft so that synchronization of throttles is not necessary). Barrels are fed from the main metering jet channels so that all fuel for main discharge jets is metered by main metering jets (under float bowl) and controlled by the vacuum economizer. Main discharge jets are air bled (by tubes on discharge jets in mixing chamber) to control mixture so that fuel flow through jets is restricted at partial throttle (high vacuum) and increased at open throttle (low vacuum). An independent idle adjustment is provided for each carburetor barrel. The idle adjustment and accelerating pump adjustment are the only points requiring attention.

IDLE ADJUSTMENT:—Needle valve type operating on gasoline. There are two idle ports in each carburetor barrel, an upper port (controlled by idle adjustment needle valve) which supplies fuel for car speeds of 5-10 M.P.H. and a lower port (non-adjustable) which operates in conjunction with the upper port to supply fuel for car speeds of 10-20 M.P.H. Both idle ports operate in conjunction with the main discharge jet to supply fuel for speeds of 20 M.P.H. to appproximately 30 M.P.H. when all fuel is supplied by the main discharge jet.

STROMBERG CARBURETORS

Adjustment:—If carburetor is out of adjustment, turn both idling adjustment screws in until they seat and then back off 2 or 3 turns. Start engine and adjust throttle lever stop screw until engine runs at approximately 5-6 M.P.H. Run engine until it is thoroughly warmed up. Turn in idling screw on inner carburetor barrel until it seats. This will cut off fuel supply to four cylinders on eight cylinder engines so that engine will fire on four cylinders. Adjust idling screw of outer barrel until engine fires smoothly. Then turn out idling screw on inner barrel until engine fires smoothly on all eight cylinders. Readjust throttle lever stop screw if necessary to secure correct idling speed.



If is not desired to adjust one barrel at a time with engine firing on four cylinders, adjust each idling adjustment individually by turning idling screw in until engine begins to miss or is rough and then turn screw out until engine fires smoothly. This point can also be determined by turning screw in until engine begins to miss and then out until engine begins to roll. The correct setting should be midway between these points. Idling screws operate on gasoline mixture and turning screw in or clockwise causes a leaner mixture and out or counter-clockwise a richer mixture.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets are fixed and cannot be adjusted. Metering jet size is stamped on the outer face of the jet in decimal fractions of an inch. To determine whether jet size is too small for particular operating conditions of the engine, with engine running at speed above 20-30 M.P.H., gradually close choke valve and note whether engine speed increases. If engine picks up speed as choke is closed the main metering jet is clogged or is too small. Clean jet with compressed air and repeat test.

At speeds up to 60 M.P.H. vacuum in economizer piston chamber (chamber is connected to carburetor barrel) will be sufficient to hold piston up against economizer spring tension so that economizer valve will remain closed. At speeds of 60-70 M.P.H. the drop in vacuum will allow spring to force piston downward, opening economizer valve and allowing additional fuel to flow past the economizer valve seat and through the economizer jet to the main metering jet channels. Economizer does not require attention.

ACCELERATING PUMP:—Pump is operated through a cam-and-lever arrangement by the throttle shaft and discharges fuel through the pump discharge tube in each carburetor barrel when the throttle is opened. Pump discharge is controlled by an adjustable needle valve located in the pump discharge channel so that all fuel discharged by the pump passes through this valve.

Adjustment:—Accelerating pump adjusting needle valve is located on float chamber cover directly below idling adjustments. Correct setting for normal conditions should be 1-1½ turns open. To check throttle pump setting, retard spark, run engine at idling speed and note performance when throttle is opened. If engine hesitates opening is too small and needle valve should be backed out or opened slightly. If engine stumbles in picking up speed opening is too large and needle valve should be turned down slightly. Check adjustment by operating car at speed of 5 M.P.H. on level road in high gear. Open throttle suddenly and note performance. If car hesitates, setting is too small. If car stumbles, setting is too large. This will be particularly noticeable as engine warms up.

FLOAT LEVEL:—There is a float level sight hole closed by a plug on the side of the float chamber. With the engine not running gasoline level in float chamber should be even with the lower edge of the sight hole. To correct float level, take off top half of carburetor body by taking out body connecting screws and accelerating pump adjusting needle valve. To raise float level, bend float lever arm at the corner where it touches float and float needle valve so that float is raised the desired amount. To lower float level, hold float lever tight against needle valve and bend float downward. Top of float should be approximately 17/64″ below top face of float chamber (gasket removed) with float needle seated.

CHOKE:—Choke valve is fitted with a relief poppet valve which opens when engine begins to fire so that engine will continue to run. Choke linkage should be adjusted so that choke valve is fully closed with choke button on instrument panel pulled all the way out and fully open when button is pushed all the way in.

EX-22—DODGE SIX, MODELS DR, DS (1934).
GRAHAM SIX, STANDARD & SPECIAL MODEL 68 (1934).
OLDSMOBILE SIX, MODEL F-34 (1934).
EX-23—OLDSMOBILE SIX, MODEL F-34 (1934).
EX-32—AUBURN, MODEL 8-50X (1934).
GRAHAM, SPECIAL MODEL 67, CUSTOM MODEL 69 (1934).
HUPMOBILE, MODEL 417-W (1934).
HUPMOBILE, AERODYNAMIC MODEL 421-J (1934).
NASH SIX, SERIES 1220 (1934).
REO, MODEL S-4 (1934).
EX-3 (2)—PIERCE ARROW, MODELS 1240-A, 1248-A (1934).
E-33—STUDEBAKER, COMMANDER EIGHT, MODEL B (1934).

NOTE:—Where Automatic Chokes or any type fast-idle mechanism is used, see separate articles for complete data. In all cases where fast-idle mechanisms are used, carburetor adjustments should not be made until engine is thoroughly warmed up and idling speed has returned to hot or 'slow' idle with choke valve wide open. On the Pierce Arrow Twelve with two carburetors (one carburetor for each bank of cylinders), accelerator linkage and choke control linkage must be synchronized so that throttle valves in each carburetor work together and so the choke valves in each carburetor likewise work together.

TYPE:—Plain tube downdraft type with positively operated accelerating pump and economizer (connected to throttle valve). Main discharge jet is located at an angle in the venturi and is air bled by means of an air bleed hole drilled in the auxiliary venturi support. Main metering jet is located directly under main discharge jet and meters all fuel for discharge jet. Accelerating pump and economizer discharge fuel into mixing chamber through pump discharge nozzle located within primary venturi. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type operating on gasoline. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and idling, close throttle and idle engine (adjust throttle lever stop screw if necessary). Turn idling adjustment screw in until engine begins to miss and then back off screw until engine fires smoothly and maximum speed is attained for the throttle position. Adjusting screw operates on

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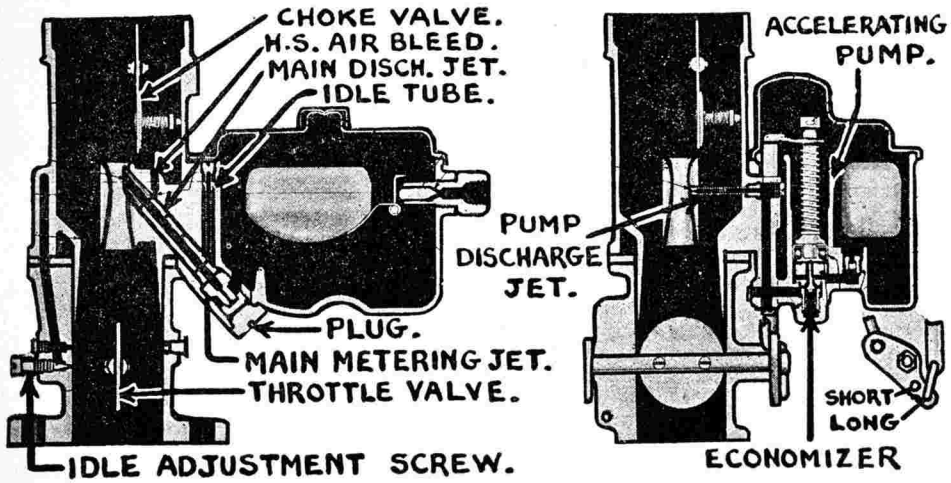
gasoline and should be turned in to secure leaner mixture and out for richer mixture. Readjust throttle lever stop screw if necessary to secure correct idling speed of engine.

NOTE:—There are two idling ports, an upper idling port (for low speed) above the throttle valve, and a lower port (for idling with closed throttle) below the throttle valve. The idling adjusting screw controls the fuel mixture supply for the lower port. If correct idling adjustment cannot be secured or if low speed operation is unsatisfactory, take out idling adjustment screw and upper idling port plug and blow out ports with compressed air. The idle tube located in the carburetor body can also be taken out and cleaned with compressed air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jet which meters all fuel for main discharge jet is of the 'fixed' type and is not adjustable. Jets should not be changed except for special fuels or to compensate for special operating conditions such as high altitude.

Economizer is built in lower end of accelerating pump and is operated by pump piston. At speeds above 60 M.P.H. or with wide open throttle, economizer needle valve pin will be forced down, opening the economizer valve, and allowing additional fuel to flow through the valve and be discharged into the mixing chamber through the pump discharge nozzle. Economizer is correctly set at the factory and the adjustment should not be changed. If carburetor is disassembled, the position of the adjustment nut (at upper end of pump piston rod) should be noted so that adjustment will not be changed when pump is reassembled.



ACCELERATING PUMP:—Accelerating pump piston rod is connected to a pump operating rod under float cover (pump in float bowl). On the upstroke of the pump piston gasoline is drawn from the float chamber through the pump check valve into the pump chamber. On the downstroke of the piston when the throttle is opened, this fuel is forced out through the economizer needle valve and discharged through the pump discharge nozzle into the mixing chamber. The closing of the check valve prevents fuel flowing back into the float chamber. When the throttle is held open the economizer needle valve is opened by the pump piston and additional fuel is discharged through the pump nozzle. This fuel is metered by the pump discharge nozzle or restriction.

Adjustment:—Throttle lever has two holes for engagement of pump rod link to provide varied pump stroke. Inner hole providing short pump stroke should be used for summer driving or average temperatures. Outer hole at end of lever should be used to provide maximum pump stroke for winter driving.

FLOAT LEVEL:—Fuel level in float bowl (distance to top edge of float bowl) for all models is given below. Float height can be changed to correct fuel level by bending float lever at the point where it is attached to the float.

Car Model	Carburetor Model	Fuel Level
Auburn 8-50-X	EX-32	9/16″
Dodge DR, DS	EX-22	5/8″
Graham Six 68	EX-22	5/8″
Graham Eight 69	EX-32	9/16″
Hupmobile 417W, 421J	EX-32	5/8″
Nash Six 1220	EX-32	9/16″
Oldsmobile Six F-34	EX-22-23	5/8″
Pierce Arrow Twelves	EX-3	9/16″
Studebaker Commander B	E-33	9/16″

CHOKE:—See special articles on Stromberg and Sisson Automatic Chokes. Choke valve is provided with a relief poppet valve which will open when engine begins to fire and will prevent over-choking. On cars with conventional choke control, see that choke linkage is adjusted so that choke valve is fully closed with choke button pulled all the way out and wide open with choke control button pushed all the way in.

EE-1 —AUBURN, MODEL 8-50Y (1934).
FORD, V-8-112 (1934).
OLDSMOBILE EIGHT, MODEL L-34 (1934).
EE-22—CHRYSLER, AIRFLOW EIGHT MODEL CU (1934).
CHRYSLER, AIRFLOW IMPERIAL EIGHT MODEL CV (1934).
HUPMOBILE, AERODYNAMIC EIGHT MODEL 427-T (1934).
LINCOLN, MODELS V-12-136, V-12-145 (1934).
NASH, ADVANCED EIGHT MODEL 1280 (1934).
PACKARD EIGHT, MODELS 1100, 1101, 1102 (1934).
PACKARD SUPER EIGHT, MODELS 1103, 1104, 1105 (1934).
STUDEBAKER, PRESIDENT EIGHT MODEL C (1934).
EE-23—LA SALLE, MODEL 350 (1934).
EE-3 —CHRYSLER, AIRFLOW CUSTOM IMPERIAL MODEL CW (1934).
PACKARD TWELVE, MODELS 1106, 1107 (1934).
PIERCE ARROW, EIGHT CYLINDER MODELS 8-36A, 8-40A (1934).
STUTZ, MODEL DV-32 (1934).

NOTE:—Where Automatic Chokes or any type fast-idle mechanism is used, see separate articles for complete data. In all cases where fast-idles are used, carburetor adjustments should not be made until engine is thoroughly warmed up and idling speed has returned to hot or 'slow' idle with choke valve wide open.

TYPE:—Dual barrel plain tube downdraft type. These models are similar in design to other 'E' type carburetors except that each carburetor barrel has independent main discharge jets, main metering jets, throttle valves and idling adjustments. Throttle valves are mounted on a single shaft and will **not require** synchronization. Accelerating pump is positively operated by the throttle through a 'walking beam' connection mounted on the carburetor upper body. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

See special article on Stromberg Automatic Choke for complete description of adjustment and 'Choke' paragraph below for setting on each car model.

IDLING ADJUSTMENT:—Needle valve type operating on gasoline. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle. Adjust inner (left hand) idling adjustment screw for smoothest and fastest running position by turning idling screw in until engine begins to miss and speed decreases, then turn screw out until engine begins to roll, finally turn screw in until engine fires smoothly (final setting should be approximately half way between missing and rolling points). Adjust outer (right hand) idling

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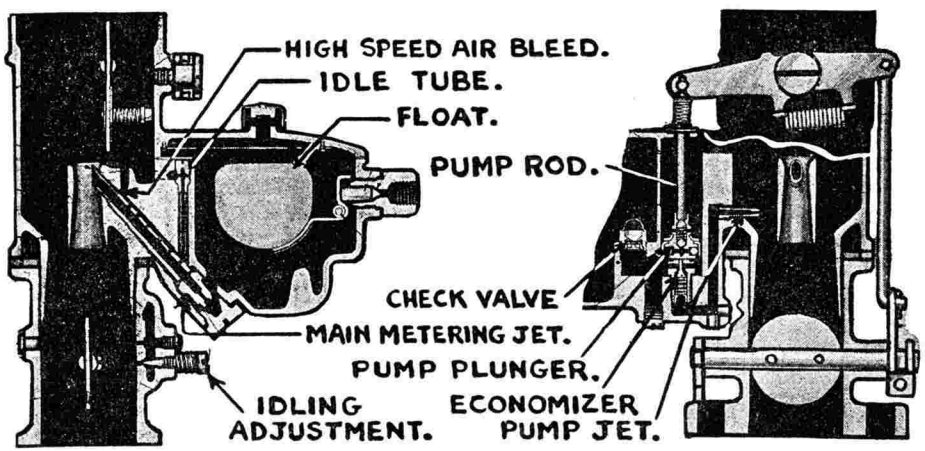
adjustment screw in the same manner. Idling screw operates on fuel mixture and should be turned in for leaner mixture and out for richer mixture.

On 'V' type engines with two ignition coils where one coil furnishes ignition for one bank, ignition can be cut off for one bank by disconnecting the coil primary or grounding the coil high tension lead to the engine block so that the engine will idle on the remaining cylinders. The idle adjustment for the carburetor barrel feeding the cylinders which are firing can then be adjusted. The coil should then be reconnected and the other coil disconnected so that the engine will fire on the cylinders of the other bank. The idle adjustment for the carburetor barrel feeding this bank can then be adjusted. After both idling adjustments have been completed in this manner, engine should be idled on all cylinders and any necessary readjustment made to secure smooth running. The throttle stop screw can then be adjusted to secure correct idling speed.



If correct idling adjustment cannot be secured, take out idle adjusting screw and upper idling port plug and clean out idling ports with compressed air. The idling tubes located in the carburetor body can also be taken out and cleaned with compressed air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets which meter all fuel for main discharge jets are of the 'fixed' type and not adjustable. Jet size is stamped on the jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuels or operating conditions such as high altitudes.

Economizer is built in lower end of accelerating pump and is operated by pump piston. At speeds above 70 M.P.H. or with wide open throttle, economizer needle valve is forced down, opening the economizer valve, so that additional fuel flows through the valve and is discharged into the mixing chamber through the pump discharge nozzle. Economizer is not adjustable and does not require attention.

ACCELERATING PUMP:—Accelerating pump is operated through a walking beam arrangement by the throttle lever. Pump chamber is filled with fuel from the float chamber (flowing through the pump check valve) when the throttle is closed. When the throttle is opened, this fuel is discharged through the economizer valve and the pump discharge nozzle into the mixing chamber. Check valve prevents fuel being discharged back into the float chamber. When the throttle is held open, the piston opens the economizer needle valve so that fuel flows straight through the pump and is discharged through the pump nozzle. The pump discharge nozzle meters this fuel.

Adjustment:—Throttle lever has two holes for engagement of pump rod to provide varied pump stroke. Inner hole (shorter radius) providing short pump stroke should be used for average temperatures or summer operation. Outer hole providing maximum pump stroke should be used for winter operation.

FLOAT LEVEL:—Fuel level in float bowl (distance to top edge of float bowl) for all models is given in table below. Float height can be changed to correct fuel level by bending float lever at the point where it is attached to the float.

Car Model	Carburetor Model	Fuel Level
Auburn 8-50Y	EE-1	15/32″
Chrysler CU, CV	EE-22	9/16″
Chrysler CW	EE-3	9/16″
Ford V-8-112	EE-1	15/32″
Hupmobile 427T	EE-22	5/8″
La Salle 350	EE-23	5/8″
Lincoln V-12-136, 145	EE-22	9/16″
Nash 1280	EE-22	9/16″
Oldsmobile L-34	EE-1	15/32″
Packard 1100, 1, 2, 3, 4, 5	EE-22	9/16″
Packard 1106, 7	EE-3	9/16″
Pierce Arrow 836A, 840A	EE-3	9/16″
Studebaker President C	EE-22	9/16″

CHOKE:—See special article on Stromberg Automatic Choke. Choke valve is provided with a relief poppet valve to prevent over-choking. On cars with conventional choke control, see that choke valve is fully closed with choke control button on instrument panel pulled all the way out and wide open with choke button pushed in.

STROMBERG DOWNDRAFT CARBURETORS

Car Model	Year	Carb. No.	Main Metering Jet Size	Main Metering Jet Part No.	By-Pass Jet Size	By-Pass Jet Part No.	Main Disc. Jet Size	Main Disc. Jet Part No.	H. S. Bleeder	Idle Tube Part No.	Idle Air Bleeder Size	Idle Air Bleeder Part No.	Pump Nozzle Size	Pump Nozzle Part No.
AUBURN 8-50X	1934	EX-32	.060"	P-17004	4#56	P-18149	#28	P-18548	#70	P-17007	#50	P-15477	#68	P-18126
AUBURN 8-50Y	1934	EE-1	.050"	P-19442	1#61	P-19724	#36	P-19440	#65	P-17007	—	P-15477	#60	——
CHRYSLER CU 8	1934	EX-32	.056"	P-17004	—	P-18149	#28	P-17167	—	P-17007	#56	P-15477	#70	P-18126
CHRYSLER CU, CV	1934	EE-22	.053"	P-17004	1#53	P-19481	#28-36	P-19840	#70	P-17007	—	P-15477	#70	P-18852
CHRYSLER CW Cust.	1934	EE-3	.058"	P-17004	.060"	P-16965	#30	P-20236	#70	P-17007	—	P-15477	#72	P-17454
DODGE DR, DS	1934	EX-22	.058"	P-17004	4#56	P-18149	#28-36	P-18226	#70	P-17007	#55	P-15477	#66	P-18126
FORD V-8-112	1934	EE-1	.048"	P-19442	1#63	P-19447	#36	P-19440	#65	P-17007	—	P-15477	#60	——
GRAHAM 68-6	1934	EX-22	.061"	P-17004	4#56	P-18149	#32	P-19546	#70	P-17007	#54	P-15477	#69	P-18126
GRAHAM 69-Cust. 8	1934	EX-32	.069"	P-17004	4#56	P-18149	#28	P-19798	#70	P-17007	#56	P-15477	#65	P-18126
HUPMOBILE 417-W	1934	EX-32	.059"	P-17004	4#56	P-18149	#28	P-18548	#70	P-17007	—	P-15477	#70	P-18126
HUPMOBILE 421-J	1934	EX-32	.068"	P-17004	4#56	P-18149	#28	P-17005	#70	P-17007	—	P-15477	#69	P-18126
HUPMOBILE 427-T	1934	EE-22	.053"	P-17004	4#56	P-18149	#28-36	P-18413	#65	P-17007	—	P-15477	#74	P-18852
LA SALLE 350	1934	EE-23	.049"	P-17004	1#62	P-19739	#36	P-18338	#68	P-17007	—	P-15477	#60	——
LINCOLN KA, KB	1934	EE-22	.057"	P-17004	1#53	P-19481	#28-36	P-19364	#65	P-17007	#46	P-15477	#67	P-18852
LINCOLN 251	1934	EE-22	.057"	P-17004	1#53	P-19481	#36	P-18483	#65	P-17007	#46	P-15477	#70	P-18852
NASH 1220	1934	EX-32	.061"	P-17004	4#56	P-18149	#32	P-18241	#70	P-17007	#50	P-15477	#67	P-18126
NASH 1280	1934	EE-22	.050"	P-17004	4#56	P-18149	#36	P-17969	#70	P-17007	#46	P-15477	#71	P-18852
OLDSMOBILE F-34 6	1934	EX-22	.058"	P-17004	4#56	P-18149	#28-32	P-19702	#70	P-19773	#54	P-15477	#66	P-18126
OLDSMOBILE F-34 6	1934	EX-23	.058"	P-17004	4#56	P-18149	#28-32	P-19702	#70	P-19773	#54	P-15477	#66	P-18126
OLDSMOBILE L-34 6	1934	EE-1	.049"	P-19442	1#64	P-19523	#36	P-19704	#65	P-19874	—	——	#60	——
PACKARD 1100, 1, 2	1934	EE-22	.056"	P-17004	.060"	P-18149	#36	P-17993	—	——	—	P-15477	#70	P-18213
PACKARD 1103, 4, 5	1934	EE-22	.060"	P-17004	1#65	P-18149	#36	P-17993	—	——	—	P-15477	#79	P-18213
PACKARD 1106, 7	1934	EE-3	.058"	P-17004	—	P-16965	#28-36	P-18413	—	P-17007	#46	P-15477L	#65	P-17769
PIERCE ARROW 836A	1934	EE-3	.060"	P-17004	.060"	P-16965	#28	P-18969	#70	P-17007	#41	P-15477	#72	P-17454
PIERCE ARROW 840A	1934	EE-3	.060"	P-17004	.060"	P-16965	#28	P-18969	#70	P-17007	#41	P-15477	#72	P-17454
PIERCE ARROW 12	1934	EX-3	.059"	P-17004	—	P-16965	#28	P-17005	—	P-17007	#48	P-15477R	#68	P-18126
REO S-4 Six	1934	EX-32	.056"	P-17004	4#56	P-18149	#28-32	P-19702	#70	P-17007	#55	P-15477	#70	P-18126
REO Roy. Eight	1934	EE-23	.055"	P-17004	4#56	P-18149	#28-36	P-19364	#65	P-17007	#46	P-15477	#66	P-18852
STUDEBAKER Com. B	1934	E-33	.061"	P-17004	4#56	P-18149	#30	P-19130	#70	P-17007	#56	P-15477	#67	P-18126
STUDEBAKER Pres. C	1934	EE-22	.052"	P-17004	4#56	P-18149	#36	P-17969	#70	P-17007	—	P-15477	#74	P-18852
STUTZ DV-32	1934	EE-3	.058"	P-17004	—	P-16965	#36	P-17015	—	P-17007	#48	P-15477	#62	P-17454

STROMBERG UPDRAFT CARBURETORS

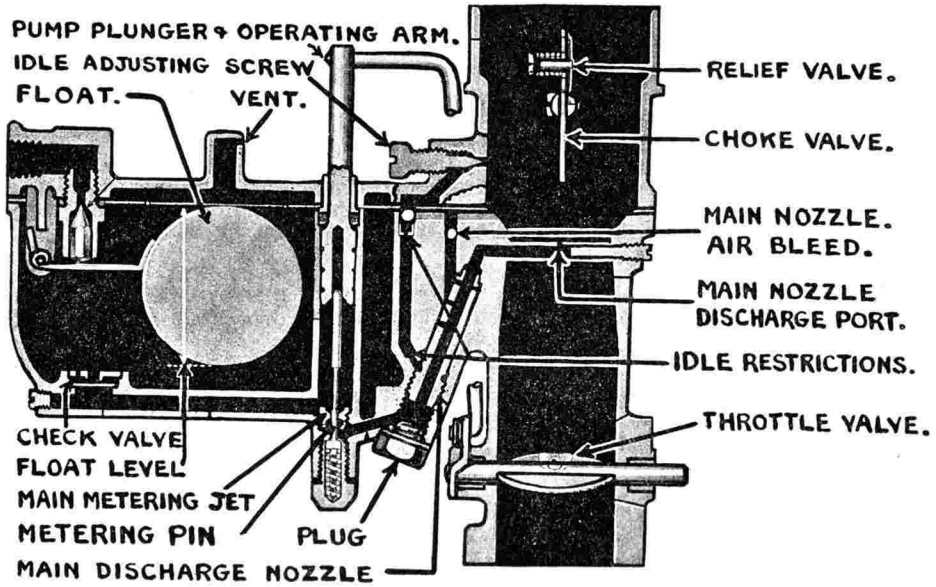
Car Model	Year	Carb. No.	Main Metering Jet Size	Main Metering Jet Part No.	By-Pass Jet Size	By-Pass Jet Part No.	Main Disc. Jet Size	Main Disc. Jet Part No.	H. S. Bleeder Size	H. S. Bleeder Part No.	Pump Reducer Size	Pump Reducer Part No.	Pump Disc. Tubes Size	Pump Disc. Tubes Part No.
CUNNINGHAM V-10	1934	UUR-2	.054"	P-15494	.028"	P-15405	#30	P-13829	#70	P-13829	—	Adj.	#65	P-15491
FRANKLIN 18, 19	1934	URO-2	.064"	P-12512	.030"	P-15405	#24	P-15376	—	P-15379	#60	P-15749	—	——
GRAHAM 67 Std. 8	1934	URO-2	.061"	P-15384	.056"	P-15405	#30	P-19513	#56	P-15379	#56	P-15915	—	——
HUPMOBILE 422	1934	UUR-2	.046"	P-15494	.028"	P-15405	#30	P-13829	#70	P-13829	—	Adj.	#65	P-15491
HUPMOBILE 426	1934	UUR-2	.046"	P-15494	.028"	P-15405	#30	P-13829	#70	P-13829	—	Adj.	#65	P-15491
NASH 1290	1934	UUR-2	.049"	P-15494	.050"	P-15405	#30	P-13829	#70	P-13829	—	Adj.	#70	P-15491
STUDEBAKER Dict. A	1934	UR-23	.054"	P-15384	.036"	P-15405	#32	P-15376	#65	P-15379	#68	P-15870	—	——

TILLOTSON CARBURETORS

D-1A—WILLYS FOUR, MODEL 77 (1934).

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and economizer (metering rod and metering jet assembly). Fuel for main nozzle (located above a plug at the side of the barrel) is metered by a metering pin and jet assembly at the bottom of the accelerating pump. Metering pin is pressed down by accelerating pump piston, permitting an increased fuel flow for high speed or wide open throttle operation. Main nozzle is air bled by a vent tube and hole in the carburetor body casting. Fuel for idling is taken from the main nozzle well up through the idle channel riser and is metered by restrictions at the bottom and top of the channel. The idle passage at the top of the idle channel is air bled by a vent in the carburetor barrel below the choke valve. This vent is controlled by the idle adjustment screw. Fuel mixture is taken down through a passage in the body casting and discharged through two ports opposite the throttle edge (closed throttle position). Idle adjustment is the only point requiring attention.

IDLE ADUSTMENT:—Make a preliminary adjustment of the idle adjusting screw by turning screw in or clockwise until it is seated, then turn screw out or counter-clockwise exactly 1¼ turns. Run engine until it is thoroughly warmed up, close throttle, adjust throttle lever stop screw so that engine runs at correct idling speed. Turn idle adjusting screw out or counter-clockwise until engine begins to miss (mixture too lean), then turn screw in slowly until engine fires smoothly. Idle screw operates on air and should be turned out for leaner mixture and in for richer mixture. Check idling speed and readjust throttle stop screw if necessary. Correct idling speed should be 7 M.P.H.



ACCELERATING PUMP:—Accelerating pump cylinder is supplied with fuel from main fuel channel under float bowl and discharges through metering jet to main nozzle when throttle is opened. A check valve in the bottom of the float chamber prevents fuel being discharged back into the float bowl. Accelerating pump should not require adjustment.

ECONOMIZER:—Metering pin in metering jet is pressed up by a spring below the pin for partial throttle operation so that the larger diameter section of the pin restricts the fuel flow through the jet. The upper end of the metering pin stem is engaged in a hole in the accelerating pump plunger so that the metering pin is pressed down when the throttle is opened, the smaller diameter section of the metering pin then permitting a larger fuel flow through the metering jet. Metering pin and jet assembly is not adjustable and should not require attention.

FLOAT LEVEL:—To check float level, take off float bowl cover (upper casting), invert cover, measure distance from gasket face to bottom of float (bottom when not inverted). This distance should be ——". Float level can be corrected by bending float lever. See that float lever stop permits full travel of float.

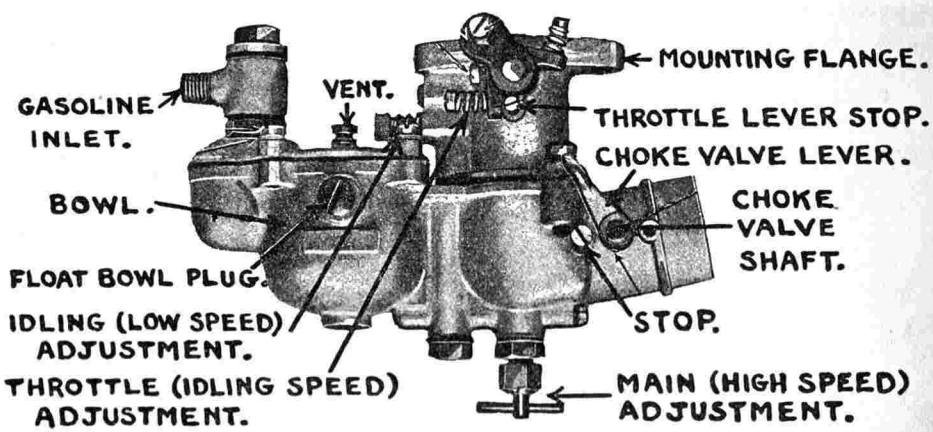
CHOKE:—Choke valve is fitted with relief poppet valve to prevent over-choking. Check choke linkage to see that choke valve is fully closed when choke control button on dash is pulled all the way out and wide open when choke control button is pushed in.

M-10A—AUSTIN, BANTAM MODEL (1934).

TYPE:—Plain tube updraft type. Carburetor has two adjustments. The main or high speed needle valve controls the fuel for the main nozzle. The idle or low speed adjustment screw controls the fuel mixture for the idle discharge ports in the wall of the mixing chamber opposite the throttle edge. Adjustments should be made in the order given below.

PRELIMINARY ADJUSTMENT:—Turn main or high speed adjustment needle valve in or clockwise until it is seated, then open or back off needle valve exactly 1½ turns. Turn idling or low speed adjusting screw in or clockwise until it is seated, then back off adjusting screw ½ turn. Start engine and run until it is thoroughly warmed up.

MAIN (HIGH SPEED) ADJUSTMENT:—With engine warm and running, open throttle until engine speed is approximately 30 M.P.H. Turn main adjusting needle valve in or clockwise until engine begins to slow down for want of fuel. Then slowly turn adjusting handle out or counter-clockwise until engine runs smoothly. The correct setting should be approximately ⅛-¼ turn from the first position. This adjustment should be made slowly and needle valve should not be opened beyond the point where smooth running and power is secured in order to assure maximum economy.



IDLING (LOW SPEED) ADJUSTMENT:—With engine running, close throttle and adjust throttle lever stop screw so that idling speed is somewhat faster than normal. Turn idling adjustment screw in or clockwise until engine begins to miss, then turn screw slowly out or counter-clockwise until engine fires smoothly. Adjusting screw controls fuel mixture and should be turned in for leaner mixture and out for richer mixture. After completing adjustment, adjust throttle lever stop screw to secure correct idling speed.

CHOKE CONTROL:—Choke valve is held in place on choke valve shaft by a spring which allows choke valve to open slightly when engine begins to fire, preventing over-choking. Adjust choke linkage so that choke valve is closed (engine not running) when choke control button on instrument panel is pulled all the way out and wide open with control button pushed in.

ZENITH CARBURETORS

105-DC—STUTZ, MODEL SV-16 (1934).

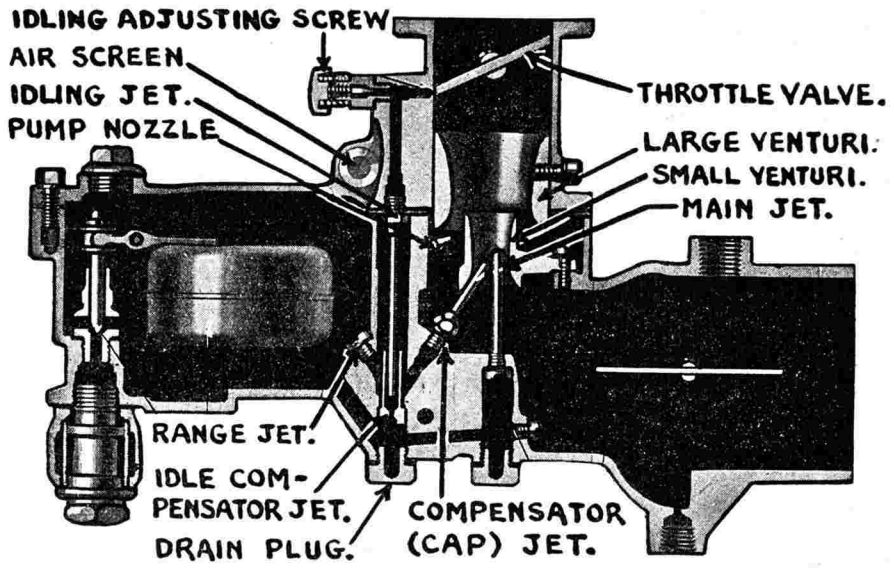
TYPE:—Dual barrel or duplex updraft plain tube type with positively operated accelerating pump connected to throttle lever. Carburetor barrels have independent metering and discharge jet assemblies, idle adjustments, and throttle valves (throttle valves are mounted on the same shaft and will not require synchronization). All jets are fixed or non-adjustable type. Main jet (high speed jet) located in secondary venturi is fed by fuel flowing directly from float chamber through a channel to a well under the jet. Idle jet located in idle well is fed by fuel from main jet channel through the idle compensator jet (forming the bottom of the well) and also by the range compensator jet (in float chamber). Cap jet located in secondary venturi is fed from the idling well and will take all fuel from range compensator jet and overflow from idle compensator jet at driving speeds (idle jet discharge is operative only during closed throttle idling and low speed driving). Idle discharge tube (above idling jet) is air bled and the air bleed is controlled by the idling adjustment screw. This is the only point requiring attention.

IDLING ADJUSTMENT:—Engine must be warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle, adjust throttle lever stop screw if necessary to keep engine from stalling. Then adjust each idling screw, turning screw out or counterclockwise until engine begins to miss or speed falls off, and then turning screw in or clockwise until engine fires smoothly. Idle adjustment screws operate on air and must be turned out to secure leaner mixture and in for richer mixture. After each idling screw has been adjusted and engine fires smoothly on all eight cylinders, adjust throttle lever stop screw to secure correct idling speed.

If correct idling adjustment cannot be secured, clean out idle compensator jet (under plug on bottom of carburetor) with compressed air, take out idle adjustment screw assembly and blow out idle port. Idle jet can also be cleaned with compressed air if carburetor is disassembled (jet is screwed in upper carburetor body). If low speed operation is unsatisfactory clean out range compensator jet in float chamber.

PERFORMANCE:—All jets are of the 'fixed' type. Jets should not be changed except to compensate for special fuel or operating conditions, such as high altitude. Manufacturer recommends that jets not be changed unless car is operated permanently at elevations greater than 6000 feet.

ACCELERATING PUMP:—Not adjustable. Accelerating pump discharges fuel into pump discharge chamber when throttle is opened. This fuel feeds the pump discharge jet located below the primary venturi in each carburetor barrel. Discharge jet or nozzle is air vented. Excess fuel discharged into pump discharge chamber when throttle is quickly opened overflows and escapes back into float chamber. Pump discharge chamber will maintain fuel level until fuel is all discharged through pump jet or until throttle is closed when fuel remaining in discharge chamber will be sucked back into the pump cylinder by the pump plunger. Accelerating pump is not adjustable.



FLOAT LEVEL:—Fuel level in float chamber should stand ¾" below top edge of float bowl with engine not running. Float level should not require adjustment. Float level can only be changed by changing position of spool on float needle valve stem and float lever should not be bent.

CHOKE CONTROL:—Choke linkage should be adjusted so that choke valve is fully closed when choke control button on instrument panel is pulled all the way out and wide open when choke control button is pushed all the way in.